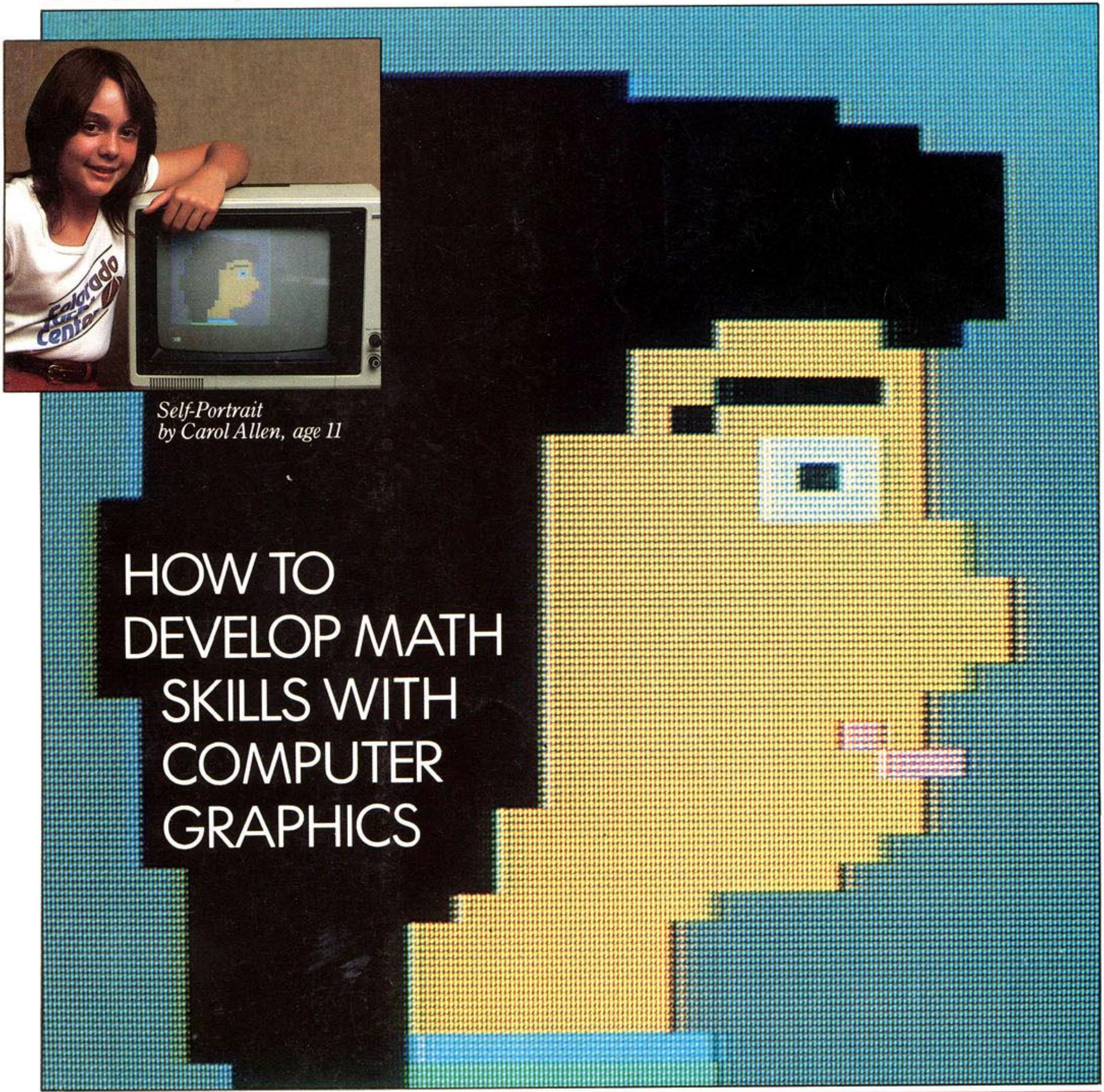
Volume 1, Number 3 $3.50

Scholastic's Magazine for Today's Elementary Classrooms

TEACHING and computers

Published by Scholastic Inc.

November/December 1983



Self-Portrait
by Carol Allen, age 11

HOW TO DEVELOP MATH SKILLS WITH COMPUTER GRAPHICS

How can computers help LD kids? • Make a social studies database •

Plus, a Christmas play, worksheets, and a poster on computer history

CCW
TM
CHILDREN'S COMPUTER WORKSHOP
AN ACTIVITY OF
CHILDREN'S TELEVISION WORKSHOP
Park
Airplane
FINISH
START
Elephant
Rope
Light
Balloon
Hat
Flag
Monkey
Tractor
Barn
Tree
og
Building
Bottle
Fish
Rock
Wave
Cloud
PICTURE PLACE!
TM
WHERE WORDS AND PICTURES PLAY TOGETHER
school
car
tower
bench
more
the end
rain
tree
woman
cloud
more
the end

CIRCLE 13 ON READER SERVICE CARD

The Unique Educational Ingenuity Of Children's Computer Workshop Comes Alive on TRS-80® Computers

Our Play-With-Language Series Makes Learning Fun

Radio Shack and the Children's Computer Workshop

The Radio Shack line of educational software now includes a superb package from Children's Computer Workshop. CCW is an activity of Children's Television Workshop—the people who brought you Sesame Street®, The Electric Company™ and 3-2-1 Contact™.

Play-With-Language— An Early Reading Experience

This exceptional package consists of three word and reading activities for first and second graders. Each activity reinforces the skills taught in the other lessons. The included diskette is for use on our 32K and 64K TRS-80 Color Computers with joysticks. The package also includes a detailed teacher's guide, board games and posters, spirit masters and activity cards.

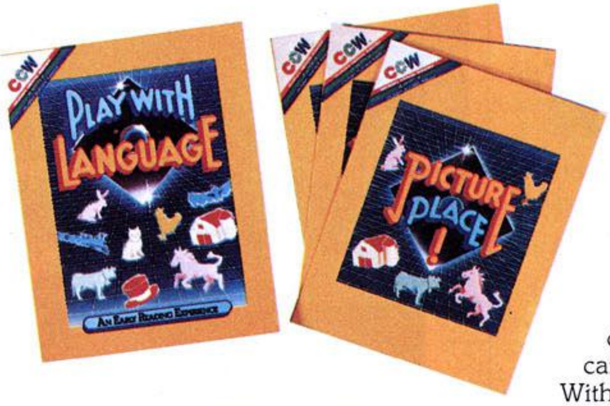
A Blend of Education And Entertainment

As with CTW's television series, Play-With-Language was created on the premise that learning should be fun. The experts at CCW have designed wholesome software that encourages active learning with constructive play, taking prime advantage of the TRS-80 Color Computer's potential as an outstanding teaching tool.

An Integrated Package With Well-Defined Learning Objectives

Play-With-Language features three activities with specifically defined goals . . .

- **Sight words and new vocabulary** are presented in *Picture Place!* The child selects one of six scenes, chooses words, places them in the scene, then magically turns the words into images. Over 150 words and images are included in the disk.



- **Word families** in *Roll-A-Word* help children master the concept of rhyming words and linguistic groups. By combining exciting visuals with different word families, sentences are completed in imaginative ways.
- **Reading comprehension** is developed in *Bagasaurus.* As with the other activities, the student works at his or her own pace while actively engaged in the reading process.

The Learning Manager

A special editor included on the diskette permits the teacher to create individualized lessons for classes, small groups or students. The teacher has the flexibility of choosing from among several predesigned exercises which address specific skills related to the basic activity format. Or, teachers can design their own exercises with individuals or groups of children in mind. No prior programming knowledge is required! The Learning Manager also allows the teacher to save student work on diskette for discussion with the class or to share with parents.

Radio Shack Gives You Complete Support

We have 25 Regional Educational Coordinators located across the country who can inform you about Play-With-Language, as well as the rest of our educational offerings. They can conduct demonstrations, workshops, and in-service training sessions. And they can assist you in selecting the computer system and courseware that best suits your school's needs.

For the name of your Regional Educational Coordinator, call 800-433-5682, toll-free. In Texas, call 800-772-8538.

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CIRCLE 13 ON READER SERVICE CARD

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Seven new ways to keep your kids thinking.

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Our new software joins seven other units: *Division Skills; Mixed Numbers; Decimal Skills; Vocabulary Skills: Prefixes, Suffixes, Root Words; Vocabulary Skills: Context Clues; Punctuation Skills: Commas;* and *Punctuation Skills: Endmarks, Semicolon, Colon.* Each unit features an easy-to-use management system and complete Teacher's Guide, plus reproducible activity sheets keyed to each skill.

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Designed for Apple II microcomputers in 6th, 7th and 8th grade classrooms. (Required 48KRAM, 3.3 DOS, in Applesoft ® BASIC.)

For more information, phone: 413-525-6411, ext. 2334. Or write Milton Bradley Software, 443 Shaker Road, East Longmeadow, MA 01028. We'll send you our free brochure. Or contact your local microcomputer software dealer for a demonstration.

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CIRCLE 11 ON READER SERVICE CARD

Milton Bradley Educational Software

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YOU WON
TIME LEFT
0:05
START
6/9 = 2/3
FINISH
apple II
Microcomputer Software
Ratios and Prop

Published by Scholastic Inc.

TEACHING and computers

November/December 1983 Vol. 1, Issue 3

FEATURES

16 Five Ways to Use Databases in Social Studies
Kids learn a lot about history, geography, and sociology when they make their own social studies databases.

20 Reaching Every Child
In Commack, New York, the computer is a learning disabled child's best friend. It helps the LD student develop attention span; visual and motor skills; and best of all, self-confidence.

24 Pretty As a Pixel!
A few math and graphing skills are all you need to turn the computer into an electronic palette. Let this introductory lesson help students plot computer pixels (dots) into works of art.

28 A Computer Carol
Raise the curtain on drama this month with a lively takeoff on Charles Dickens' play *A Christmas Carol.* In this version, kids learn computer history.

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Enhance your storytelling with a computer.

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COVER PHOTOGRAPH BY BRUCE McALLISTER
GRAPHIC DESIGN BY CAROL ALLEN

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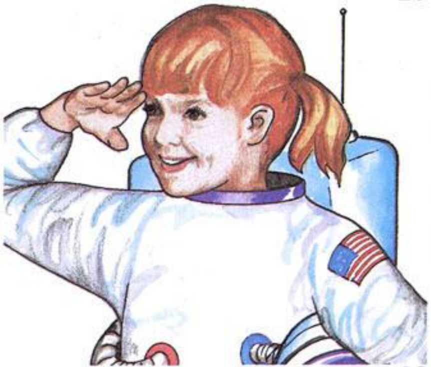

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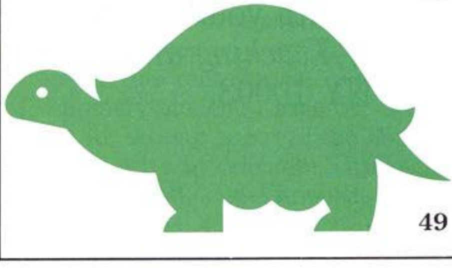

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TEACHING
and computers

Beautiful Computer Centers Contest

Is your computer center look'n' good? Does it have decor galore? If so, enter a photo of it in *Teaching and Computers*' Beautiful Computer Centers Contest and you could win **$200!**

If your computer center is looking a little drab these days, conduct a Decorate the Computer Center Week, and *then* enter *T&C*'s fabulous new contest!

The contest has two categories: (1) **Cozy Corners,** for centers that occupy part of a room; and (2) **Best-Looking Labs,** for centers that occupy an entire room or more.

First prize is $200, to be awarded to the winner in each category; second prize for each category is $100; and third prize for each category is $50.

To enter the contest, send a color photo or slide of your computer center and a written description of how you decorated it to: Beautiful Computer Centers Contest, *Teaching and Computers,* 730 Broadway, New York, NY 10003. Entries must be postmarked no later than February 1, 1984.

Winning centers will appear in a future issue of *Teaching and Computers.* Entries cannot be returned unless accompanied by a self-addressed, stamped envelope. All photos, descriptions, and other material submitted by prize winners become the exclusive property of *Teaching and Computers.*

Entry Form: Beautiful Computer Centers Contest

Clip out and send this coupon along with your photo and written description to BCC Contest, *Teaching and Computers*, 730 Broadway, New York, NY 10003.

Name: ______________________ Grade: ____

School: ______________________

Home address: ______________________

Home phone: ______________________

Category: ______________________

TEACHING
and computers

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FROM THE EDITOR

You Ought to Be in Pixels!

That steadfast profile on this month's cover belongs to Carol Allen, a sixth grader at McGlone Elementary School in Denver, Colorado. It's a self-portrait, actually. After a simple lesson in x,y coordinates, Carol was able to plot her own likeness. You can teach your students how to immortalize their mugs on the screen, and how to create other colorful computer pictures as well. Just follow the introductory graphics lesson, **Pretty As a Pixel,** on page 24.

The lesson contains a program listing that shows kids, step-by-step, how to form pictures by plotting pixels (tiny dots) on the computer screen. It's lots of fun and children will develop important math and graphing skills at the same time.

Eleven-year-old Carol Allen proudly displays her electronic self-portrait.

The *Teaching and Computers* staff has a playwright in its midst! She's Assistant Editor Lesli Rotenberg. Lesli has done considerable work in children's theatre. We twisted her arm (just a little) to see if she would write a play for *T&C* readers to use with their students.

The result is **A Computer Carol,** page 28, a lively take off on Charles Dickens' *A Christmas Carol*. In Lesli's version, curmudgeon Titus Grump says "bah, humbug" to computers—until he learns more about them, that is.

The play is written so you can adjust the cast to just about any number. The costumes and scenery can be simple.

If you're signed up for an all-school presentation this year, consider putting *A Computer Carol* on your playbill.

Contributing Editor Shiela Swett is traveling the classroom circuit these days. Two months ago she was in Yeadon, Pennsylvania, reporting on a school that uses the PILOT language. This month she's been in Commack, New York, talking to Dolores Shanahan, "a truly inspiring teacher," who helps other teachers in her school district use computers with learning disabled children. Dolores was a 1982 Distinguished Achievement Award recipient in the Educator of the Year Awards program, sponsored by our sister publication, *Electronic Learning*.

She has created a variety of activities and short software programs that help LD students develop attention span, visual and motor skills, memory, and most important—self-confidence. The story, **Reaching Every Child,** begins on page 20.

If your school office uses a database software program, you just may have a free piece of software for your social studies curriculum. See if you may borrow it for a day or two. Then turn to page 16, **Five Ways to Use Databases in Social Studies,** and you'll find database activities that explore geography, history, and sociology.

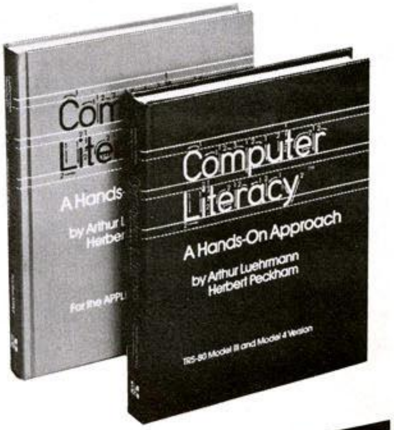
There's much more in our combination November-December issue. Don't miss the poster on computer history, page 41; the reproducible worksheets for primary students, page 56; a program for writing poetry, page 36; and exciting ways to celebrate Thanksgiving, Hanukkah, and Christmas—electronically, page 45!

Mary Dalheim

Editor

CIRCLE 10 ON READER SERVICE CARD

The Truly Teachable First Course in Computing . . .



Computer Literacy

A Hands-On Approach
by Luehrmann and Peckham

—For teachers in grades 6-12 with or without computer experience.

—Specific versions for Apple and TRS-80 . . . networkable.

—Stresses problem solving skills through structured programming in BASIC.

—Complete course in one text, includes copyable diskette.

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IDEA OF THE MONTH

Enhance Storytelling With a Computer

By Candy Colborn

The Foolish Frog, Perambulatin' Pumpkin, Paul Bunyan, Rum Tum Tum, and The Magic Orange Tree. These are just some of the characters embroidered on my storytelling shirt. Each time I tell a new story, I embroider something on the shirt to represent the story.

When I put on my storytelling shirt, kids get excited because they know I'm about to tell another tale. They get even more excited when I illustrate the stories with computer graphics. Here's how I illustrate one of my favorite stories—"La Hormiguita" (From *The Day It Snowed Tortillas,* Joe Hayes, Enchanting Land Books, 1982.)

"La Hormiguita" is a tale about a little ant who goes out to play even though her mother says no. I touch the single letter "A" on the computer keyboard, and the Logo turtle draws an ant. The children are silent and wide-eyed.

La Hormiguita gets caught in a snowstorm, and another single touch of the keyboard produces a pattern of snowflakes. Graphics also represent each of the forces that La Hormiguita asks to help her: the sun, clouds, wind, a wall, a rat, a cat, a dog, and finally a flea who saves the day.

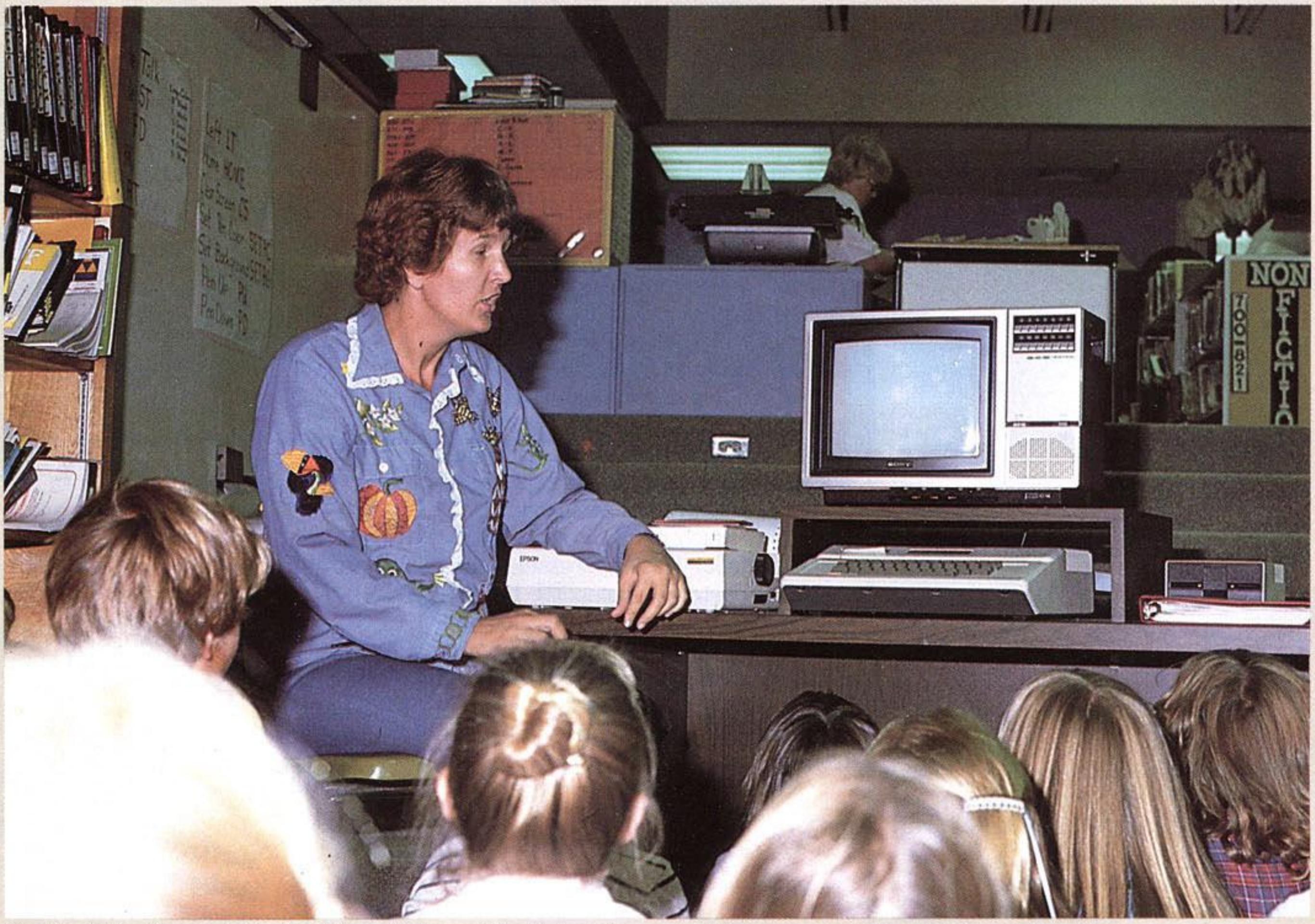
When the story is over, I wait for the question that makes it all worthwhile, "How did you do that?" (I have never been disappointed.) That's how Logo lessons begin.

All of the students at Cottonwood Creek Elementary, from kindergarten to grade six, see and hear each of my stories. Then I encourage them to choose their own favorite tales and program Logo graphics to match them.

The computer has not replaced traditional storytelling at Cottonwood Creek Elementary. There are still days when I show up with my guitar, books, or puppets to illustrate a story. But the combination of storytelling and programming encourages students to reach out in new directions while practicing needed skills.

You already know my answer to the next question the children ask, "Can I make up my own story?" ■

Candy Colborn is a media specialist at Cottonwood Creek Elementary School in Englewood, Colorado.



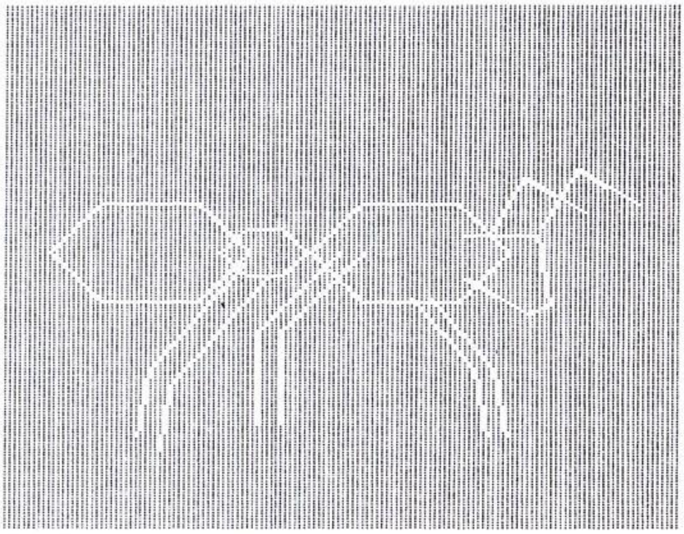
It's storytelling time and Candy Colborn is dressed for the occasion.

Program Listings for *La Hormiguita*

Program listings for illustrating the tale of La Hormiguita *are for Apple Logo.*

PROGRAM FOR ANT

```
TO A
SETBG 2
SETPC 0
PU
FULLSCREEN
SETX -120
SETH 45
PD
A1
PU
SETX -50
SETH 45
PD
REPEAT 2 [FD 15 RT 45]
FD 15 RT 90
REPEAT 2 [FD 15 RT 45]
FD 15
PU SETX -12
SETH 45 PD
A1 PU SETX 60
PU
SETX 52 SETY 7
PD
SETH 90 FD 30 RT 80 FD 30 RT 80
FD 10 RT 50 FD 30
PU SETX 61 SETY 6 SETH 30 PD
FD 30 RT 90 FD 30
PU SETX 83 SETY 10 PD
SETH 30 FD 30 RT 90 FD 30
PU SETX -40 SETY -5
PD SETH 220 FD 60 LT 30 FD 30
PU SETX -31 SETY -11 PD SETH 220
FD 60 LT 30 FD 30
PU SETX 30 SETY -20
PD SETH 140 FD 40 RT 30 FD 30
PU SETX 38 SETY -20 SETH 140 PD
FD 40 RT 30 FD 30
PU HOME LT 135 PD FD 50 LT 45 FD 40
HOME SETX 10 PD LT 135 FD 50 LT 45
FD 40 HT
END
```



This is how La Hormiguita (ant) appears on the computer screen.

Procedure for A1 (ant's body):

```
TO A1
FD 30 RT 45 FD 40 RT 45 FD 30 RT 90
FD 30 RT 45 FD 40 RT 45 FD 30
END
```

PROGRAM FOR WIND

```
TO W
CS FULLSCREEN
WINDOW SETBG 5
SETPC 1 P
PU HOME SETH 20 PD P
PU HOME SETH 40 PD P
PU HOME SETH 60 PD P
PU HOME SETH 80 PD P
PU HOME SETH 100 PD P
PU HOME SETH 120 PD P
END
```

Procedure for Polystep:

```
TO POLYSTEP:SIDE:ANGLE
FD :SIDE
RT :ANGLE
END
```

Procedure for P:

```
TO P
FULLSCREEN
POLYSTEP 10 45
POLYSTEP 15 45
POLYSTEP 20 45
POLYSTEP 25 45
POLYSTEP 30 45
POLYSTEP 35 45
POLYSTEP 40 45
POLYSTEP 45 45
POLYSTEP 50 45
POLYSTEP 55 45
POLYSTEP 60 45
POLYSTEP 65 45
POLYSTEP 70 45
POLYSTEP 75 45
HT
END
```

PROGRAM FOR SNOWFLAKES

```
TO SN
CS FULLSCREEN SETBG 5 SETPC 1
REPEAT 20 [FLAKE SCATTER]
END
```

Procedure for Flake:

```
TO FLAKE
REPEAT 10 [FD 30 RT 160]
END
```

Procedure for Scatter:

```
TO SCATTER
PU RT RANDOM 360 FD RANDOM 150 PD
END
```

UPDATE

News For Computer-Using Teachers

SCHOOLS NEED MORE MATH, SCIENCE, AND TECHNOLOGY

Alarming numbers of Americans are ill-equipped to work in and profit from our increasingly technological society, says a report by the National Science Foundation. Called "Educating Americans for the 21st Century," the report proposes that schools spend more time on math, science, and technology. It also suggests that competent teachers in these three fields receive increased rewards. "Ultimately," the report says, "the public will get what it pays for."

BOSTON SCHOOLS SPEND $4.7 MILLION ON COMPUTERS

Boston Public Schools (BPS) plan to purchase $4.7 million worth of computer equipment in the next three years. The plan will be funded by the BPS (including federal block grants), the general municipal budget, and private donations. Each year, 15-unit computer labs will be set up in a number of schools until every student in the public school system has access to computers.

WHERE DO STATES STAND ON COMPUTER LITERACY?

Fifteen states either require or officially recommend that schools offer exposure to computers according to a recent survey by *Electronic Learning* magazine. Three of the states—Florida, Rhode Island, and Virginia—and the District of Columbia, require that students demonstrate computer literacy skills. Five other states—Hawaii, Indiana, New Hampshire, South Dakota, and Texas—require that schools offer students the opportunity to use computers. And seven states—California, Colorado, Delaware, Minnesota, Ohio, Pennsylvania, and North Carolina—recommend that schools offer students exposure to computers. The board of education in one state, Pennsylvania, has proposed a requirement that students demonstrate computer literacy by the sixth grade.

SOFTWARE REVIEW DIGEST

Do you need help choosing software? ***The Digest of Software Reviews: Education*** offers opinions on the most frequently reviewed educational programs on the market. Each quarterly issue includes published reviews of 50 software programs. The first four volumes cost $42.95. Contact: School and Home Courseware, Inc., 1341 Bulldog Lane, Suite C, Fresno, CA 93710.

START A COMPUTER CLUB

Interested in starting a computer club at your school? Apple Computer Clubs will tell you how with a computer club starter kit. Kits contain two recruiting posters, a manual that teaches how to organize a computer club at your school, and brochures that describe what computer clubs do. The first 10,000 kits are free. To get one, have your principal write a letter to Apple Computer Clubs, Box 948, Lowell, MA 01853, or call 617/452-9979.

MORE MICROS IN ELEMENTARY SCHOOLS

The use of microcomputers in elementary schools took a big jump during the 1982-83 school year according to a national survey conducted by Quality Education Data in Denver, Colorado. Elementary schools are now at the level where secondary schools were in 1981 in terms of the percentage using micros. The number of elementary schools with microcomputers increased 175 percent between 1982 and 1983.

ACORN COMPUTER ENTERS U.S. MARKET

Acorn, the largest-selling computer in British schools, has reached the United States. Acorn has 64K of memory, built-in word processor, speech synthesis, color graphics, and local area networking capability. Designed by educators at Cambridge University and manufactured by the British Broadcasting Corporation, Acorn comes with software, lesson plans, workbooks, teacher notes, and student notes. It also offers a videotape course called "The Computer Programme" that was aired on PBS stations. The cost without the monitor or the disk drive is $995.

ELECTRONIC INTEGRATION IN WEEHAWKEN, NEW JERSEY

Three elementary schools in Weehawken, New Jersey, use computers and video equipment to integrate Hispanic and other ethnic groups. Instead of busing students on a day-to-day basis, the schools use a three-phase approach that brings the children together to use the technology. In phase one, students from the three schools meet together on Saturday mornings to produce simulated news programs on video tape. Phase two uses a computer network to link the three schools. And phase three allows the schools to share video programs through teleconferencing.

K-POWER MAGAZINE FOR KIDS

K-Power, a new monthly computer magazine for teen and pre-teen computer enthusiasts, will make its debut this February. Published by Scholastic Inc., the magazine will include expert and reader-written programs, computer graphics lessons, software reviews, and answers to computer-related problems. Computing teens across the country will link up by modem to form the magazine's advisory board. ■

Tools of the trade from Reston

1,2,3 My Computer & Me!
CYBERLOGO TURTLE
Using a Microcomputer in the Classroom
My Students Use Computers
The Apple Logo Primer
The Elements of CAL
Triple BrainTrust
The Turtle's Sourcebook
Kids and the VIC

My Students Use Computers.
An excellent guide that provides a scope and sequence of objectives and activities for integrating computers into the K-8 curricula. R4805-9, cloth, $23.95.

1,2,3 My Computer and Me.
By joining in the escapades of the rabbit and turtle, children discover and learn all about Logo. R5228-3, paper, $10.95.

Triple Brain Trust.
An excellent game for improving basic reading and question-answering skills with topics like General Sports and Movie Trivia. R8790-9, book/disk, $34.95.

Turtle Sourcebook.
A comprehensive guide and workbook for adults working with children learning Turtle graphics. R7890-8, paper, $21.95.

Using Microcomputers in the Classroom.
An excellent introduction to the personal computer, with the emphasis on applications of micros in schools. R8144-9, paper, $12.95.

Creating Computer Programs for Learning.
This guide shows you how to use BASIC to create instructional programs. R1168-5, paper, $14.95.

A complete line of high quality books and software for computers and their use in education. Reston's tools for the trade are perfect for you and your students. There are books for the Apple, the ATARI, the VIC, BASIC, Logo—just to name a few. Reston—the best source for your computer education needs.

CyberLOGO Turtle
is an easy way to learn version of Logo. One of the best ways to learn and explore about computers. R1203-0, box/disk, $79.95.

Elements of CAL.
It covers the basic concepts necessary to understand how good computer aided learning is created, plus new and innovative ideas to experienced practitioners. R1700-5, paper, $16.95.

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IN MY OPINION

Teachers Can Make a Difference

By Walter J. Koetke, Jr.

There is considerable evidence that the quality of public education in the United States is in a period of decline. According to the 1983 report by the National Commission on Excellence in Education, for the first time in our history, we are graduating children who are not as well educated as their parents.

The problem of decline is not limited to education. In recent years, our nation's productivity has gone down, too. Automobile production has declined by almost one-third, industrial machinery by 33 percent, and telecommunications equipment by 50 percent, to give just a few examples.

The easiest path for all of us is to accept the current bandwagon of decline. But I won't do that. And I don't think you should either. We must not deny the problem because the evidence is overwhelming. We must not hide behind a feeling that the problem wasn't our fault in the first place because that's irrelevant. And we must not wait for someone else to solve the problem for us because that's the same as giving up.

Changes in institutions don't happen overnight. And they are not accomplished by one or two individuals. Instead, institutional changes are the results of many small steps taken by lots of people. You are one of those people. And so am I.

As educators, we can make a difference! What we do for one child or an entire class can make a difference if we make excellence first on our list of priorities. Let's see that everything that leaves our desks is of the highest quality. Let's set an example for other staff members with our work and our attitude.

Another way we can make a difference is by taking advantage of technology when it can help us to educate the children. It's imperative that we teach our students to use computers in their pursuit of skills and knowledge. In doing this, we will teach them the skills they will need when they leave school.

This point is especially important today. The applications of technology will continue to increase in the future. We are told that society is now in the Information Age and rapidly moving into the Knowledge Age. Information and knowledge have always been the business of educators. Our time to make a difference is now! ■

> *"As educators, we can make a difference! What we do for one child or an entire class can make a difference if we make excellence first on our list of priorities."*

Walter J. Koetke, Jr., *was a teacher and computer specialist for 15 years in the Lexington, Massachusetts, public school system. For the last five years, he served as computer services director for the Northern Westchester Board of Cooperative Education Services (BOCES) in New York. He is currently the director of technology for Scholastic Inc.*

What's on your mind? Do you have an opinion that you'd like to share with other computer-using teachers? Send it to: In My Opinion, *Teaching and Computers*, 730 Broadway, New York, NY 10003.

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QUESTION CORNER

By Molly Watt

BILL'S ONLY FRIEND IS A COMPUTER

Dear Molly: Thanks to computers, Bill has finally become interested in school. This new found interest takes up all of his time. Now he doesn't talk to any of the other students. What should I do?

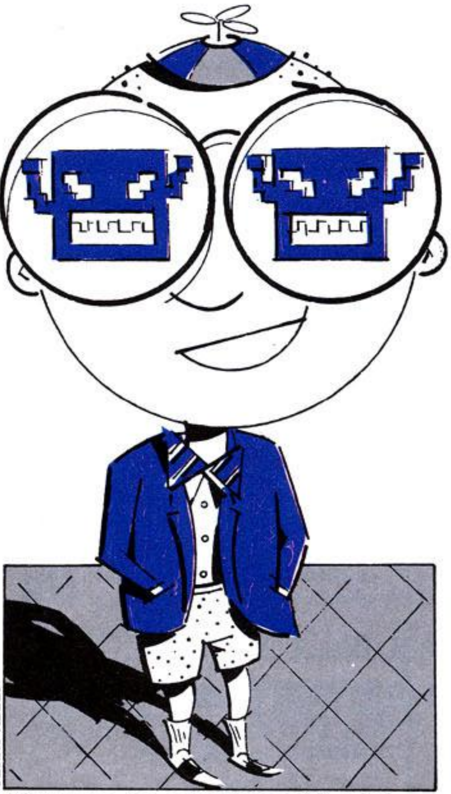
Carol Rousse
Burlington, VT

Your question proves that a computer will never take the place of a teacher. A computer would never have raised the question of Bill's social interaction.

In general, computers don't turn kids antisocial. In fact, computers in school settings often encourage collective problem solving. Many software programs are designed for group activity. Also, for many kids who have trouble making friends, the computer provides a nonthreatening way to work with others on a common goal.

If this is not the case in your class, you need to provide students with more opportunities for social interaction. Here are three things you can do: (1) Use software that is designed for group use like *Snooper Troops* detective stories; (2) Provide a show-and-tell period for sharing ideas and discoveries about the computer; (3) Ask students with a strong interest in the computer, like Bill, to teach something to a classmate or a younger child.

Sometimes students like Bill need to learn how to share their knowledge and enthusiasm.



TERRY ALLEN

Bill always has computers on his mind.

I'M NOT READY TO USE COMPUTERS

Dear Molly: Our school district has just invested in 10 computers and my principal is putting one in my classroom. It's all new to me and I'm scared. Four students in my class already have computers at home and know a lot more about them than I do. Should I wait until I know more about computers before I use them in class?

Robin Flynn
Chippewa Falls, WI

No! No! No! Think of all the computer time your children will lose. I understand that you feel intimidated by your students' knowledge. But you can use their knowledge to your advantage. Let experienced students teach their classmates how to use the computer.

At the same time, select one or two basic programs and, as a class, experiment with them. *Delta Drawing* is a good choice because it allows you and your students to create interesting graphics programs. *Ernie's Quiz, Instant Zoo, Spotlight,* and *Mix and Match* are also good programs for beginners. *(For more information on these and other software recommended in this column, check the listing on the next page.)*

Meanwhile, outside of school, you can take a computer course, attend a workshop, or join a user group to learn more. If you stay relaxed and give yourself time to learn about the computer, you will soon find yourself enthusiastically teaching other teachers about this tool.

DISK DRIVES VS. CASSETTE RECORDERS

Dear Molly: Are disk drives better than cassette recorders?

Lynn Green
Kansas City, KS

A cassette recorder is an outmoded form of computer technology. The money you save when you buy one is not worth the benefits you give up.

Not only can you save more information with a disk drive than with a cassette recorder, but you can also load programs more rapidly into the computer's memory. This translates into less frustration, more flexibility, and more computer time for your students.

SELECTING GOOD SOFTWARE

Dear Molly: There are so many software programs on the market. How do I make sure I buy the best ones for my students?

Jerry Allen
Somerville, MA

Here are some tips to help you find good software. Software should:

1. Have no bugs (no technical problems or errors).
2. Let the user control the program's speed and difficulty.
3. Adapt to students' individual needs.
4. Provide positive reinforcement and help kids understand wrong answers.
5. Take advantage of the computer's distinct capabilities.
6. Allow for easy teacher modification.
7. Stimulate creativity.
8. Include clearly written documentation and suggestions for supplemental activities.

QUESTION CORNER

DOING COMPUTER TIME

Dear Molly: I'm in the process of making a schedule for my class. How much time should each student spend at the computer?

Elizabeth Reuter
Tempe, AZ

Try to give students at least 20 minutes of computer time per sitting. This is enough time to warm up to the computer and do something constructive.

BRINGING UP BABY

Dear Molly: I think putting computers in the kindergarten pushes kids into computer addiction. Do you agree?

Michelle Gregory
Chicago, IL

Jane Miller, director of the Price Farm School in my home town of Antrim, New Hampshire, would have agreed with you last May. But this fall, she introduced her preschool students to the computer with some easy-to-use software programs like *Juggle's Rainbow* and *Delta Drawing.* The children responded to the computer as naturally as they responded to any other learning center in the room. They still enjoyed other class activities like reading books, going on nature walks, sharing ideas in discussion, and even clean-up time. The computer became just another part of a child's world.

If the rest of the world continues to provide interesting choices, students will not become immersed in the computer.

SOFTWARE RECOMMENDED BY MOLLY

Ernie's Quiz, Instant Zoo, Spotlight, and Mix and Match
Hardware: Apple II, II Plus, IIe (48K)
Age Level: 4-13 years
Price: $50 each
Contact: Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.

Snooper Troops
Hardware: Commodore 64 (64K), IBM Personal Computer (64K), Atari 400, 800 (48K), Apple II, II Plus, IIe (48K)
Age Level: 10-adult
Price: $44.95
Contact: Spinnaker Software Corporation, 215 First St., Cambridge, MA 02142.

Delta Drawing
Hardware: IBM Personal Computer (64K), Atari 400, 800 (ROM cartridge), Commodore 64 (ROM cartridge) Apple II, IIe, IIe (48K)
Age Level: 4-14 years
Price: $49.95 disk; $39.95 ROM cartridge
Contact: Spinnaker Software Corporation, 215 First St., Cambridge, MA 02142.

Juggle's Rainbow
Hardware: Atari 400,800 (16K), Apple II, II Plus, IIe (48K)
Age Level: 3-6 years
Price: $29.95
Contact: The Learning Company, 545 Middlefield Rd., Menlo Park, CA 94025; 415/328-5410.

Do you have a computer question? Send it to Teaching and Computers *expert, Molly Watt. Molly teaches computer education courses at Keene State College in Keene, New Hampshire. Write her in care of* Teaching and Computers, *730 Broadway, New York, NY 10003.*

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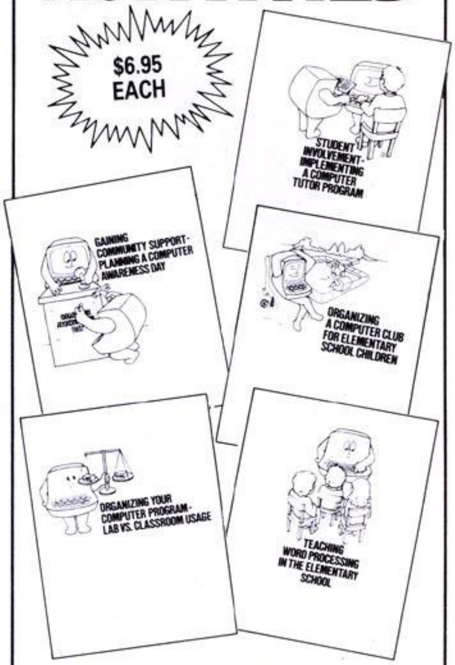
ORGANIZE YOUR COMPUTER ACTIVITIES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COMPUTER DIRECTIONS FOR SCHOOLS publishes manuals to assist staffs in the planning, organization and implementation of various computer-related activities at their schools. The manuals were written primarily with the elementary school in mind; however, many of the ideas can be easily adapted at the junior high level. The material is presented in an easy-to-read format, with helpful attachments to facilitate effective school computer management.

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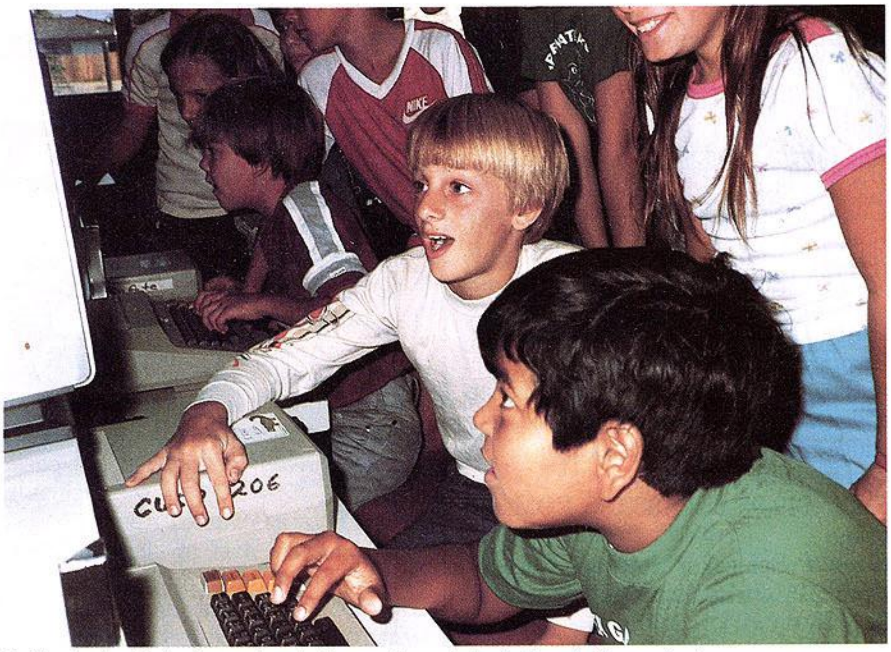
COMPUTER DIRECTIONS FOR SCHOOLS

CLASSROOM HAPPENINGS

By Lesli Rotenberg



A Computer Patrol member helps another student operate the computer.

COMPUTER PATROL

Would kids at your school sacrifice their lunch time and recess to help other kids in the computer lab? Twenty-five kids at Garden Gate Elementary School in Cupertino, California, volunteer to do it twice a week.

They are the Garden Gate Computer Patrol. And they wear badges to prove it. Each week, the fourth, fifth, and sixth grade students take turns monitoring the computer lab. It's wonderful for their self-esteem," says Joan Lippman, lab supervisor.

At the end of last year, the students in the patrol received certificates for their service at an all-school assembly. And, as a special surprise, they got to take a tour of Verbatim, a local floppy disk company. The kids wore white lab coats, met a robot who asked them questions about what they learned from the tour, and got free floppy disks.

DESIGNERS OF TOMORROW

Erro, Rainbow, Leer, CompuJet, and Dial-A-Serve. These are the computer companies of the future according to the sixth graders at the Old Donation Center for the Gifted and Talented in Virginia Beach, Virginia, who invented them.

The students worked in pairs to create 40 computer companies. They designed logos, business cards, and three-dimensional computers out of cardboard and construction paper. One computer looked like an oversized telephone. Another looked like a watch because it was for people who need to compute on the run. Kids also created software catalogs full of video games and educational programs to run on their systems.

Then they held a computer fair. Companies exhibited their equipment at booths. Each student got a ticket of admission, a credit card, an order form, and a list of exhibits. A computer program designed by one student produced random numbers between $1,000 and $999,000 to establish each individual's credit limit.

While one partner answered questions, demonstrated products, and took orders at the booth, the other used his or her credit line to shop for other computers and software. Companies promoted their products with posters, brochures, and rebate offers. Excited shoppers rushed to sale booths when they heard a bell ring and an announcement: "For the next 15 minutes, 'Homework Doer' for the Banana computer is half-price."

The fair lasted five days. Order forms were collected at the end of each day. Then information was typed into a program that sixth-grade teacher Pati Terry wrote to tabulate sales for each computer company, estimate expenses, and indicate gross sales and net profit.

TECHNOLOG
Rainbow Computers, Inc

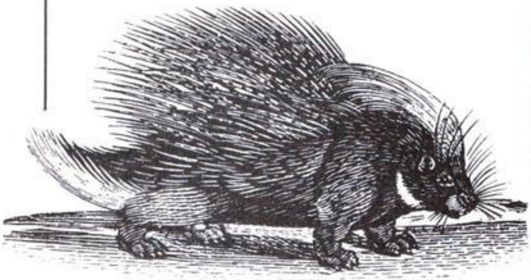
Some students from Pati Terry's class show off their computer models.

CUDDLES COMES TO COMPUTERLAND

"Have you ever touched a porcupine?" a museum guide asked the students in Lane Weiss's "High Tech-High Touch" class in Bend, Oregon. Tentative young hands reached out to feel the porcupine's soft, warm tummy. Cuddles, the porcupine, didn't notice the 18 curious youngsters that surrounded him.

The students were learning about the porcupine's habits and lifestyle from the curator of the Oregon High Desert Museum. Cuddles lives at the museum. His home is an outdoor area bordered by lava rock and furnished with things that porcupines love like small trees and rocks. The curator let students touch Cuddles' surprisingly soft belly. He also passed around a quill so students could get a closer look. Then students asked questions about Cuddles.

After meeting Cuddles, the students performed three tasks in the computer lab. First, they used a word processing program to write stories about porcupines. The students' stories were so informative, they were posted in the lobby of the Oregon High Desert Museum. Next, students used turtle graphics to draw either all or part of Cuddles. Then they used a music synthesizer to create the shrill squeaking sound that Cuddles made.



The children made a new friend. And they learned that computers, nature, and people can work together in a positive way.

FOOD FOR THOUGHT

Beef logs and cheese balls mean more computers to students at E.W. Oliver Elementary School in Atlanta, Georgia. In one week, their parents sold $35,000 worth of sausage and cheese products to buy 10 Apple computers for the school.

"We were hearing it from everywhere that our children would be behind by the time they graduated if they didn't learn about computers," Cathy Gebhardt, PTA budget and finance director says. The parents decided that every child in the school should learn to operate a computer—not just occasionally, but on a weekly basis.

Parents earned more than five times their original goal. But that only elevates their expectations for this year's fund-raising campaign. "We're going to sell $50,000 worth this time," Cathy says.

Thanks to parents' efforts, teachers can now provide every Oliver Elementary student with at least 45 minutes each week on the computer. And Oliver parents and teachers were voted the top PTA in Georgia.

LOG IN:
HAPPY
BIRTHDAY

Children in California celebrate a birthday computer-style.

HAVE A COMPUTER BIRTHDAY

Are you tired of the same old classroom birthday party activities? How about using a computer theme to celebrate birthdays? Here are a few teacher-tested ideas.

- Decorate a rectangular cake with gumdrops, peppermint sticks, licorice, and chocolate candies to look like a keyboard.
- Instead of Musical Chairs, play Dueling Diskettes. This game has the same rules as Musical Chairs, only kids sit on colored posterboard squares that resemble floppy disks instead of on chairs. For game music, let the children record beeps and whirls or tape computer-generated music. Use the same squares for a game of Computerscotch.
- You can play Pin the Program on the Screen. Blindfold the kids, and have them pin program listings on a computer screen made of posterboard.

There are more party and gift ideas in Mattel's free consumer booklet. Write to: Mattel Toys Party Booklet, Edelman Public Relations, 1925 Century Park East, Los Angeles, CA 90067. ■

Five Ways to Use Databases in Social Studies

BY ROBERT JACKSON

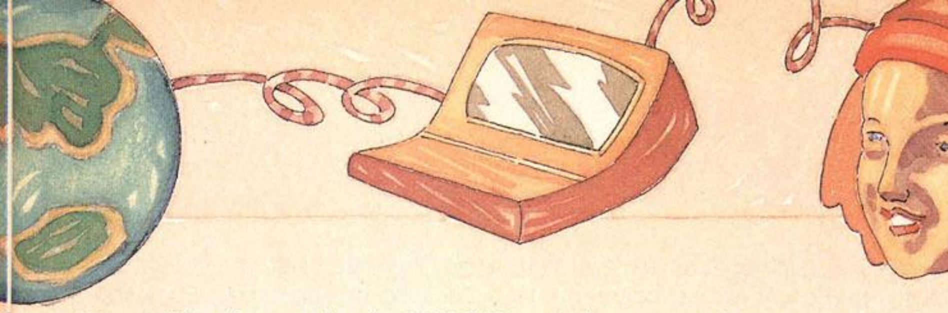
Social studies will become your students' favorite subject when they make their own databases for history, geography, and sociology projects.

1. Florida, Texas, and Georgia, are good states to grow watermelon in.
2. At the same time Francis Scott Key wrote "The Star Spangled Banner," Napoleon was exiled from France.
3. Three kids in Mrs. Thomas' class have a dog named Sparky.

These facts were discovered by elementary students who converted the database software used in their school offices into programs that could store a multitude of social studies facts. By making these databases, kids not only learned a lot about social studies; they learned how computers are used to access information.

WHAT IS A DATABASE PROGRAM?
A database program is like an electronic filing cabinet or a computerized index card box. It allows you to categorize, store, and retrieve information quickly and easily. Many businesses and schools use them. Airline companies store reservation information on them. Libraries track books, publishers, and authors on them. Police departments store gun registrations, fingerprints, and criminal records on them.

School offices use databases for keeping track of employee information, student records, and administrative costs. Some of the more popular database programs that schools use are



Home Filing System (Atari), *PFS/PFS Report* and *D-Base 2* (Apple), *Profile Plus* and *Information Storage and Retrieval* (Radio Shack), and *JINSAM 4.0*[7] (Commodore).

If your school uses a database program, you just may have a free piece of software that students can use to explore social studies. See if school office workers will let you borrow their program and if one of them will show you how to operate it. (For more information on how a database works, see the box on page 18.)

HOW CAN YOU USE A DATABASE TO TEACH SOCIAL STUDIES?

The following five activities show how students can use simple database programs to collect and analyze historical information, agricultural data, and sociological statistics.

1 **Sociology: Getting to Know You.** Introduce kids to database programs with this activity that collects information about your students' families.

Set up your database with these fields: STUDENT'S NAME, BROTHER'S NAME, SISTER'S NAME, PET (kind), and FAVORITE FOOD. Have each student enter the information on his or her family into the computer.

Now print out a list of all the kids with brothers, all the kids with dogs and cats, all the kids who like donuts, and who have sisters, and so on. Have the students count the names in each list. Discuss what it's like to have a brother or a sister and how having a cat for a pet is different from having a dog.

Joan Pankosky tried this activity with her first and second grade classes at the Mead School in Greenwich, Connecticut. They made charts of the students with brothers, sisters, dogs, and cats. The kids learned that each of them belongs to several different "social" groups. They loved seeing their names in print and learning the names of their friends' brothers and sisters. The kids plan to ask their classmate's height, favorite color, and pet's name the next time they use a database.

2 **History: Of Kings and Kingfish.** Here's an activity that teaches students about historic events that occurred in several different countries at the same time.

Divide your class into three groups: the United States, South America, and Europe. Have each group list the dates for 15 major events that occurred in their area during the nineteenth century. Then set up a file with three fields labeled YEAR, PLACE, and EVENT. After the students enter the information, have them compare information in two or more fields. For example, have them print out all the EVENTS that occurred in a specific YEAR, say 1814.

Students at the Whitby School in Greenwich, Connecticut, tried a similar activity and were surprised to see how events in U.S. history relate to events in other countries. They enjoyed asking the computer to search for key words. When they entered the word *king*, the computer showed all of the historic events that involved King Louis XVIII of France and King George IV of England. But it also showed the events that involved *kingdoms* and *kingfish*. The kids were amazed that the computer couldn't distinguish between kings and kingfish. They learned a valuable lesson about the limitations of a computer.

3 **Geography: For Amber Waves of Grain.** Teach children about crops that grow in different parts of the United States with this database activity.

Ask each student to research

(Continued)

(Continued from page 17)

one or more states. Tell them to find information for these fields: STATE, AVERAGE RAINFALL, AVERAGE TEMPERATURE, SOIL TYPES, and CROPS. Let students take turns entering their information into the computer.

Then ask students to have the computer "search" through the information they've entered to list all of the states that produce a particular crop. Under the CROPS field, for example, they might specify "corn"; the computer screen would then show every file in which "corn" appeared. Students search through the information for the names of the states that plant it. Using those files, students also can determine how much rainfall is necessary to grow corn, or what type of soil or temperature is good. Encourage kids to experiment with various fields of agricultural information.

4 **Career Awareness: What Do You Want to Be?** Ask students to list as many careers as they can. Then have each student research one on the list. Let students take turns entering the name of their careers and information for two other fields necessary for each career like SPECIAL KNOWLEDGE and SPECIAL TALENTS. Students may discover that surgeons need to know science and to be good with their hands, or that airline attendants need to know aviation and to be friendly.

After all the information is typed into the computer, have students ask the computer to print out all of the careers for persons interested in particular subjects or for persons with particular talents. From this information, have students list the careers that interest them.

5 **Global Awareness: It's a Small World After All.** Did you know that Filipino children begin caroling weeks before Christmas? And in Taiwan, Christmas gifts are given only to the poor? Create a database program to teach students about Christmas celebrations in different lands.

Ask each student to research a different country. Have students enter the name of the country first. Then enter the name for Christmas in that country, the date, and the traditions associated with Christmas. Students can call up the names for Christmas around the world, files on countries that celebrate certain traditions, etc.

BASEBALL AND ALL THAT JAZZ

Students find a database useful for their own purposes. I had one student use a simple database program to store his collection of baseball cards, while another student used a more powerful one to organize notes he was collecting for a paper. In the latter, the database method did not work for the student. He found it took him more time to classify and type in his data then it would to actually write a rough draft of the paper.

Recognizing when a database would not be appropriate for a task is important. Generally, if the time it takes to enter the information outweighs the value of the printouts, then a database should not be used. ■

Robert Jackson teaches computer programing at the Whitby School in Greenwich, Connecticut.

HOW DOES A DATABASE WORK?

Some database programs are dedicated to a specific use like storing mailing lists. Others are flexible enough to store any kind of information from income tax records to judicial decisions. The sophisticated programs are harder to learn. But, essentially, they all work alike.

Let's look at one database program that a school might use—the *PFS File* for Apple computers.

Say you want to use *PFS* to set up a database (file) to store information on historic events of the Civil War. First you load the *PFS File* into the computer. Then insert a blank disk into the disk drive. (That's where you'll store the Civil War information.)

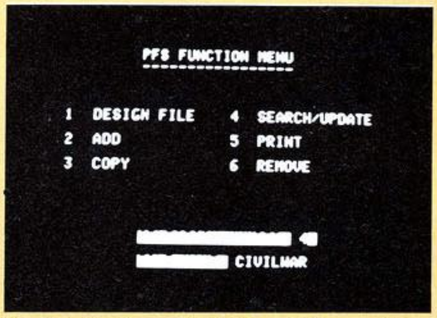
Next, select the Design File option on the *PFS* menu and enter a name for your file, such as CIVIL WAR.

Each piece of information in a database is called a *field.* You must type in a label for each field. In this case you might type in EVENT, PLACE, and YEAR. When you have entered all the fields, you press CTRL-C, and the computer saves the file just as you typed it in.

The next step is to add the information on each historic event. The computer will generate an individual file with the three fields for each event. On the first individual file, type in an event, its place, and its year where it specifies. Then press CTRL-C. This tells the computer that you are finished with that event and are ready to go on to the next one.

All the data you enter will be automatically saved on the blank disk. You can then call up and print out information in many formats. For example, you can print out a list of all the historic events of the Civil War that you input, or their places and specific years.

In addition, the *PFS File,* like most databases, has *relative search* capability. This means that it can locate all information on a particular word or set of words. For example, you can instruct the computer to display all the files that have information on General E. Lee.



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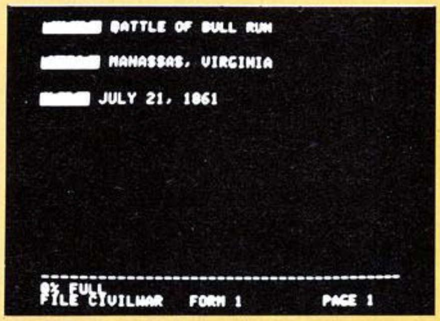
           PFS FUNCTION MENU
           -----------------

  1  DESIGN FILE     4  SEARCH/UPDATE
  2  ADD             5  PRINT
  3  COPY            6  REMOVE



                            4
                     CIVILWAR
```



```
        BATTLE OF BULL RUN
        MANASSAS, VIRGINIA
        JULY 21, 1861




---------------------------------------
0% FULL
FILE CIVILWAR   FORM 1          PAGE 1
```

Sample file for a Civil War database. Menu for setting up a database.

SWIG©

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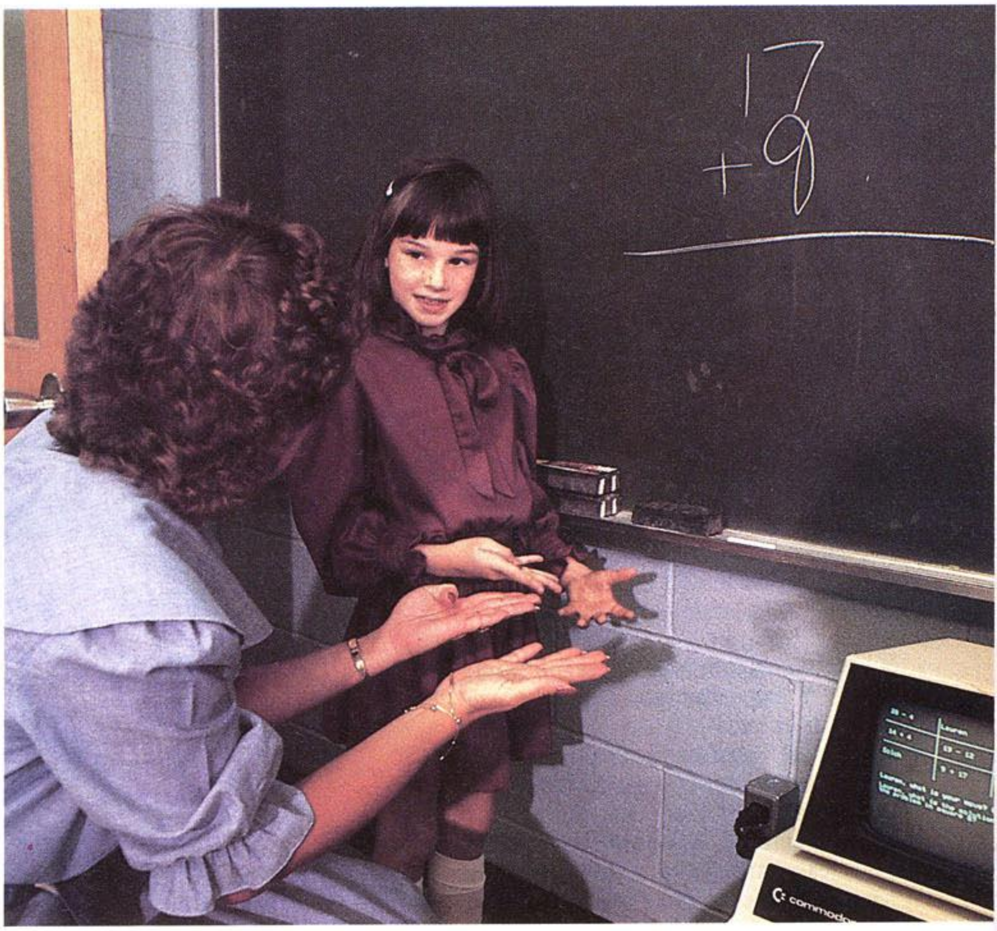
Learning disabled students in Commack, New York, are succeeding in school, thanks to computers.

REACHING EVERY CHILD

By Shiela Swett



Tic-Tac-Math is a favorite drill game in Commack, New York, schools. Before entering answers for the game into the computer, LD kids check their computations on the chalkboard.

"This is the first time anyone has told me that my son was good at something in school," remarked a pleased parent from Commack, New York. The parent was referring to her child's work on the computer.

The boy used to turn in disorganized, sketchy school work—written in messy scrawl. Now he is handing in accurately typed, highly organized computer printouts.

Like all learning disabled students in the Commack school district, the child uses the computer to compensate for learning deficiencies. In his case, the deficiencies were poor attention span and lack of motor control. For others, it may be visual problems, speech disorders, hyperactivity, or emotional withdrawal.

"In all of these cases, the computer can be a great equalizer," says Dolores Shanahan, the district's dynamic computer coordinator and founder of a six-year program to help students with special needs use the computer to learn. "The computer lets disabled students actively participate in and contribute to the world," she says.

Dolores' excellent computer program is proof of her own statement. Through programmable toys, word processing programs, homemade software, and time-sharing setups, Dolores and her colleagues are reaching children for whom traditional teaching wasn't working.

Visit any of the learning disabled classrooms or special resource rooms in Commack's seven elementary schools and here is what you'll find:

1. Students use Big Trak to develop listening skills.

Many LD students have trouble following oral directions. Enter Big Trak. Big Trak is a programmable vehicle made by Milton Bradley. Children from kindergarten on up enjoy instructing it to move forward, backward, left, and right.

Commack teachers place a number line (or sometimes an alphabet chart) on the floor and tell children to move Big Trak from one spot on the number line to another.

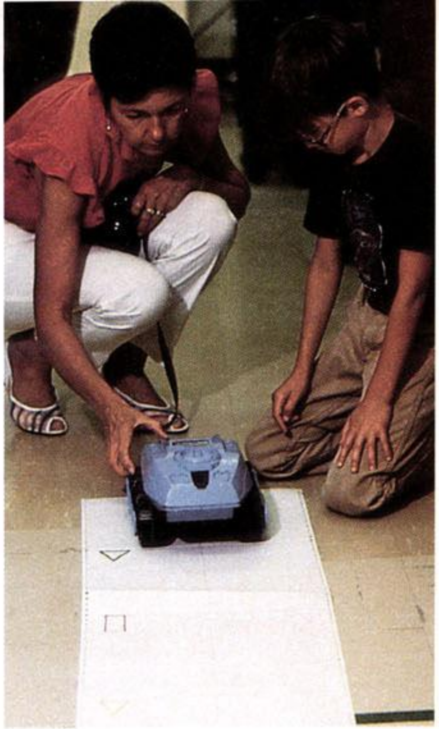
Starting at -3, second grade LD student, Sarah, was asked how many steps it would take for Big Trak to get to +2. She counted, recounted, programmed the computerized vehicle, and gleefully watched the results. When Big Trak went to +3, there was a discussion—why? "Let's try again. Think about it. . . ."

Sarah was not only learning to follow her teacher's oral directions, she was receiving good practice in the concepts of directionality, estimating, problem solving, and adding and subtracting.

2. Children use mathiputers to bone up on math facts.

Mathiputers are giant calculating machines that Commack children program to drill themselves on addition, subtraction, multiplication, and division tables. Students are quite proud of their work on the machines, and in fact, display their progress on elaborate charts and graphs. Mathiputers are es-

(Continued)



Page 22; top left: Computer Coordinator Dolores Shanahan teaches an LD child to program a toy truck. In another activity, LD children learn to identify body parts with puzzles (top right) and then with special computer programs (bottom right). Page 23; left: Playing computer games helps students develop motor control. And working with a parent volunteer (right), gives a child more one-to-one attention.

(Continued from page 21) pecially helpful for children with visual problems because their numerals are large.

3. Word processing helps students bring order to messy pencil and paper activities.

For many learning disabled children, writing with pencil or pen is very difficult. They simply do not have the motor coordination necessary to produce a nice-looking paper. Students may have a wonderful idea for a story or an intelligent answer to a science question, and be truly excited about expressing their idea on paper. But after they go through the tremendous effort it takes for them to write out their thoughts—only to see ugly, messy results; what started as an exciting experience becomes a disheartening one.

At Commack, LD students in grades four through six are beginning to use word processing software as THE tool for their writing. In Penny Greenberg's class of 10-to-12 year-olds, students turn in first drafts written by hand. Together, Penny and the student make necessary grammatical and spelling corrections; then each student types his or her story into the computer. Using word processing software, children can easily "fix" their stories and essays until they are "perfect!"

Students print out copies of them, and then to enhance them further, they superimpose pictures on the written printouts. For example, Roger drew the outline of a 8" × 10" rabbit over his neatly typed story about jack rabbits. The result? A rabbit masterpiece!

"These stories are clearly something to be proud of," Penny says. "They have been published in the school newspaper, incorporated into a class book, and even framed and hung!"

4. Homemade programs help children learn spelling words, work on math facts, and identify body parts.

"Computers are powerful in themselves, but their use can be enhanced by incorporating them into a total educational experience rather than an isolated child-machine situation," Dolores says.

For that reason, most of the school district's software reinforces specific curriculum areas like spelling, math, and reading. Much of this software (more than 30 programs) was designed by Dolores herself and programmed on cassettes for PET computers, by gifted high school students in the district. The tapes are a valuable collection for LD teaching. Children are able to control the speed of each presentation; screen displays are not overly busy or wordy; and the teacher can set specific parameters for each program such as which times table or what spelling words a student should work on.

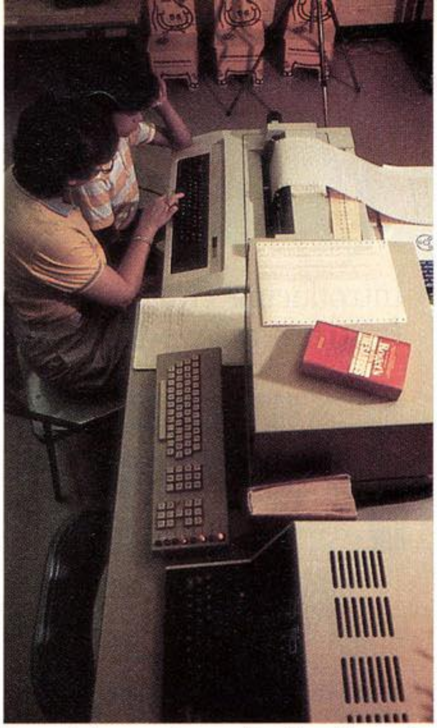
Look and Spell is a good example of the quality of Dolores' carefully designed courseware. Written for first through sixth graders, it asks the teacher to input 20 spelling or reading words. The computer then randomly selects 10 of them and instructs the user to study each word as long as he or she chooses. The child then presses a key so that the word disappears. Then he or she types in the word from memory.

Many young LD children have difficulty learning and naming basic parts of the body. Dolores even wrote a program for students with this problem. First she has children construct simple puzzles of the human body, naming the parts as they fit them together.

Then children go to the computer to play *Missing Part Robot.* In the program, a complete robot appears on the screen. Students are asked to observe its parts carefully. The robot is then replaced by a second robot in which one body part is missing. Students are to identify the part that is missing and type its name into the computer. If the answer is correct, the missing part will reappear.

The names of the body parts remain

Star Base
PET
commodore



on the screen at all times so students can refer to them. After playing the game several times, children—even kindergarteners—also learn to spell the names of the parts.

Tapes of these and other programs are available to other PET users at cost by writing to the Commack School District, Commack, NY 11725.

5. Students improve eye-hand coordination by manipulating game paddles and writing their own programs.

Many LD children in the Commack district attend special gym classes to improve their physical coordination. Teachers have discovered that certain computer games, particularly those that require manipulating paddles, also strengthen deficits in this area.

A Commack favorite is *Space War.* The program was written by a twelve-year-old LD student named Howard. Playing the game is an excellent eye-hand activity; but the process of creating the four-page program was an equally challenging motor activity for Howard. It was also an educational turn-on for him. His game is used throughout Commack schools, and he has become a hero to his peers!

6. Teachers have arranged time-sharing setups in which they use CAI programs on minicomputer systems.

The district makes extensive use of two CAI (Computer Assisted Instruction) programs—Houghton Mifflin's Dolphin series and the BOCES/LIRICS (Board of Cooperative Education Services/Long Island Residential Instructional Computer Services) series. The school district owns a special minicomputer for each series. Each school has terminals that hook up to the minicomputers, allowing them to share operating costs.

> "The computer lets disabled students actively participate in and contribute to the world."

Using either of these systems, students can work on their own level and at their own speed on programs in areas such as language arts, math, and problem solving.

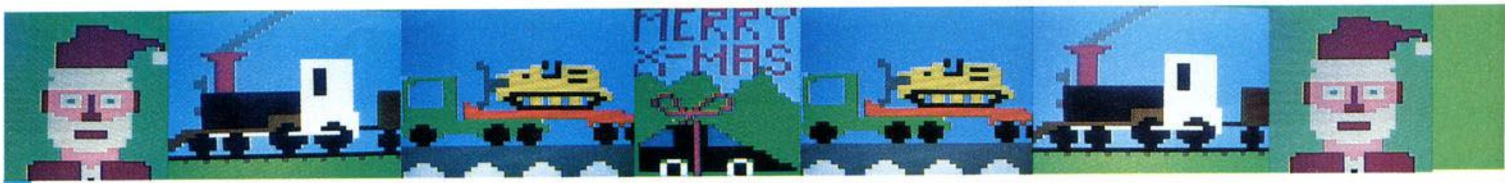
Many parent volunteers have been trained by parent Cathy Flood to go into the schools and work with pairs of children on these programs.

"The warmth of extra human computer helpers gives an added dimension to using this technological tool," Dolores says.

Skill development isn't the only service computers perform for LD students in Commack. Teachers say hyperactive children are concentrating better since the computers arrived. Stick-to-it-iveness is something new for these students, but they complete tasks now because they can't wait to see what appears on the screen next. Teachers also report that group activities and peer tutoring programs have helped withdrawn children come out of their shells. But even more significant, working on computers has given children who never experience the thrill of victory, but too often experience the agony of defeat; a feeling of pride in their work.

"And that's really something," teacher Penny Greenburg says. "Because when it comes to preparing LD children to live in our world, the name of the game is ego!" ■

Shiela Swett is a computer consultant at Rippowam-Cisqua School in Bedford, NY.



Introducing Graphics:
Part I of a Two-Part Series

PRETTY AS A PIXEL

Introduce kids to an exciting new art medium—computer graphics.

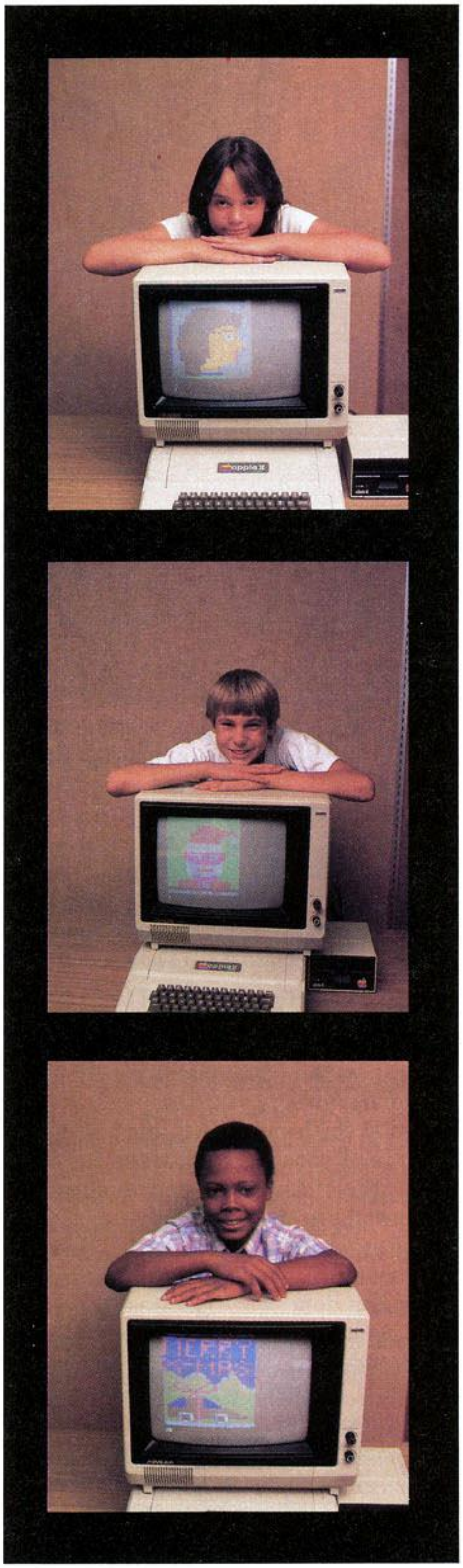
BY DAVE KIRCHNER

Who needs crayons when you've got pixels? Pixels are small, colorful dots that are grouped together to make pictures on a computer screen.

This two-part series helps you teach students how to make the most of those pixels. In Part One (this month), computer instructor Dave Kirchner provides you with a program listing and teacher's guide that helps you show kids, step-by-step, how graphics are programmed on the Apple computer. The last activity on the demonstration program allows students to design their own computer graphic.

Next month in Part Two, Dave will show you how to make a variety of graphic designs and provide you with challenging graphics activities for beginning programming students.

The material is written for the Apple computer and uses BASIC commands.



PHOTOGRAPHS BY BRUCE McALLISTER

TEACHER PREPARATION

Here's how to prepare your introductory lesson on graphics:

1. Type in the program listing for the lesson exactly as it appears on page 27. SAVE it under the file name DEMONSTRATION. (Type SAVE DEMONSTRATION.)
2. RUN the demonstration program a few times to make sure there are no bugs and to familiarize yourself with its contents. (Type RUN.)
3. Make a grid sheet by taking a piece of graph paper and numbering the squares across the top. Start with zero and end with 39. Then number squares down the left side of the paper, starting with zero and ending with 39. Make several photocopies of this paper for each student.
4. Make a poster listing the 16 Apple graphic colors and their program numbers as follows:

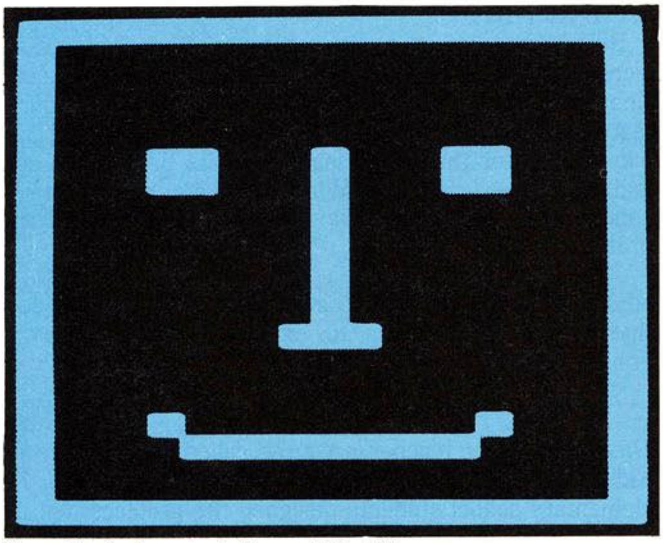
0	Black	**4**	Dark Green	**8**	Brown	**12**	Green
1	Red	**5**	Grey	**9**	Orange	**13**	Yellow
2	Dark Blue	**6**	Blue	**10**	Grey	**14**	Aqua
3	Purple	**7**	Light Blue	**11**	Pink	**15**	White

5. Just before class starts, load the demonstration program into the computer. (Type LOAD DEMONSTRATION.)

USING THE DEMONSTRATION PROGRAM

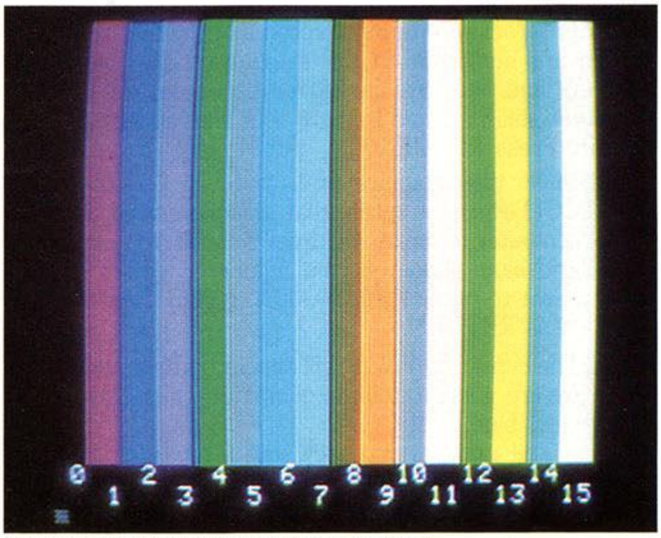
Allow about 30 minutes for the graphics demonstration program. Here's a step-by-step guide for running it.

1 After you load the demonstration program, type RUN. A simple picture of a face appears on the screen. Tell kids the face illustrates what a low resolution graphics picture looks like. Low resolution graphics are pictures that have fairly large pixels. High resolution graphics have smaller, and hence, many more pixels in a picture. High resolution graphics produce more detailed pictures. (Press any key to continue.)



Example of a low resolution graphics picture.

2 The next graphic is a display of 16 Apple colors, numbered from zero to 15. Explain to students that the Apple can produce these 16 colors. Each color has a number. Zero is for black, which is hard to see on a black screen. Fifteen is for white, which shows up best on a black and white monitor. (Press any key to continue.)



The 16 colors of Apple low resolution graphics.

3 The third image on the screen is a *graphics grid.* Provide each student with a numbered grid sheet. Point out the vertical and horizontal lines on the screen and the paper. Have students count out the lines both on the screen and the paper. Students should have counted out 40 squares down and 40 squares across.

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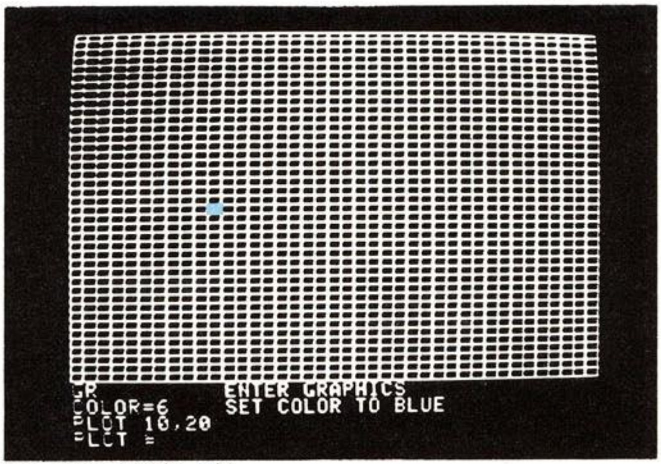
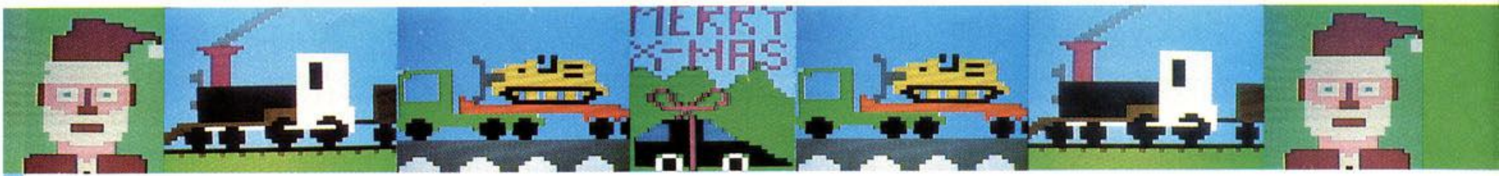


```
GR                  ENTER GRAPHICS
COLOR=6             SET COLOR TO BLUE
PLOT 10,20
PLOT =
```

The Apple graphics grid.



(Continued from page 25)

On the bottom of the screen is the instruction GR. Explain that, usually, the computer uses the screen to display words. This is called the *text mode.* In the text mode, there is room for 24 lines on the screen with 40 characters (letters, punctuation, or spaces) on each line.

When the computer displays pictures instead of words, it is in the *graphics mode.* In this mode, the computer uses the top 20 lines to display squares of color. Two squares in the graphics mode go where each character was in the text mode.

Point out that the squares on the graphics paper are numbered from zero to 39. Explain that the squares on the screen are numbered in the same way, but usually the numbers and lines are invisible. Also point out that the computer still has room to show four lines of words on the bottom. Press RETURN.

4 Under the graphics grid, you will see the words COLOR=6. Explain that this command tells the computer to make whatever squares you plot on the grid blue. Point out the numbered colors on your color poster to remind students that 6 stands for the color blue. Press RETURN.

5 The command PLOT will appear on the screen. Now we are going to tell the computer which square(s) to color blue.

Tell students that each square on the grid has two numbers. The first number tells the computer how far to go across, starting with the zero in the upper left corner. The second number tells the computer how far to go down, starting from the top of the screen. PLOT 10,20, for example, means go 10 lines across and 20 lines down and make a blue square.

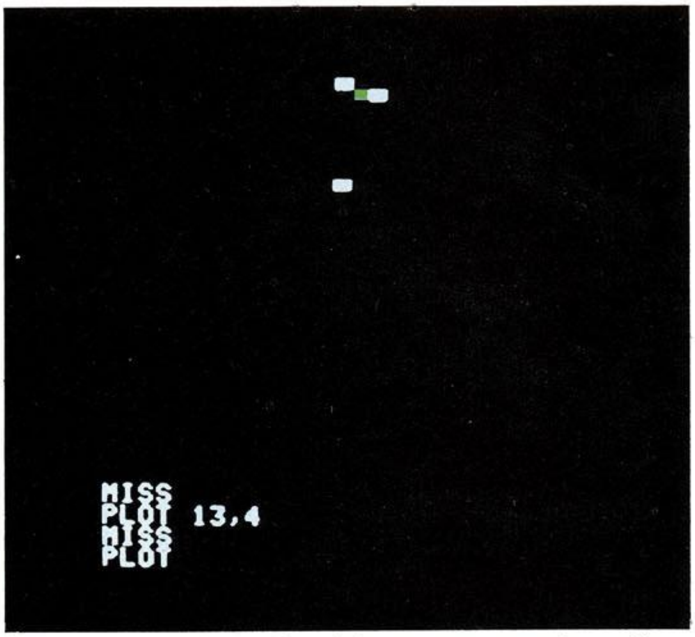
6 Type in PLOT 10,20 so that the computer puts a blue square on the coordinate 10,20.

Have students count out 10 spaces across and 20 spaces down on the screen. The spot they reach should be colored blue.

7 Type in a command that is too large, such as PLOT 42,10. You will get an ILLEGAL QUANTITY error message. Explain that an ILLEGAL QUANTITY error means that at least one of the numbers you used is not on the grid (42).

To proceed, type in PLOT -1,-1.

8 Now kids are ready for a short test on identifying coordinates. A green square will appear randomly on the screen. Students try to guess its position by typing in PLOT commands. A white square appears at the coordinates the student has entered. When the white square hits the same spot as the green square, students know they have entered the correct coordinates. Let each student try to hit the green square at least once. Enter PLOT -1,-1 to end the demonstration program. Students are now ready to create their own graphics.



```
MISS
PLOT 13,4
MISS
PLOT
```

Students guess at the location of the green square on the graphics grid by typing in coordinates.

9 Students can create their own pictures on the grid section of the demonstration program by making the following changes in the program.

- LOAD the demonstration program into the computer.
- Type in DEL 1000,3010. Press RETURN.
- Type in DEL 3160,3190. Press RETURN.
- Type in DEL 3300,4300. Press RETURN.
- Type in 3140 HCOLOR=3. Press RETURN.
- SAVE the program under the filename ARTIST. (Type in SAVE ARTIST.)

Before students go to the computer, have them create pictures by filling in squares on the numbered grid sheets. Then have them write down the coordinates of each square that they filled in. LOAD ARTIST and type RUN. Children may now enter their coordinates (across first, down second) into the computer. When they've entered all the coordinates, they should have a graphics original that's pretty as a pixel!

NEXT MONTH: Part Two includes a series of activities that encourage students to explore different types of graphic designs. ■

Dave Kirchner teaches a course called "Computers for Kids" in the Denver, Colorado, Public School System. His elementary school students designed the graphics that appear in this feature. One of his students also created the electronic self-portrait on the cover of this issue.

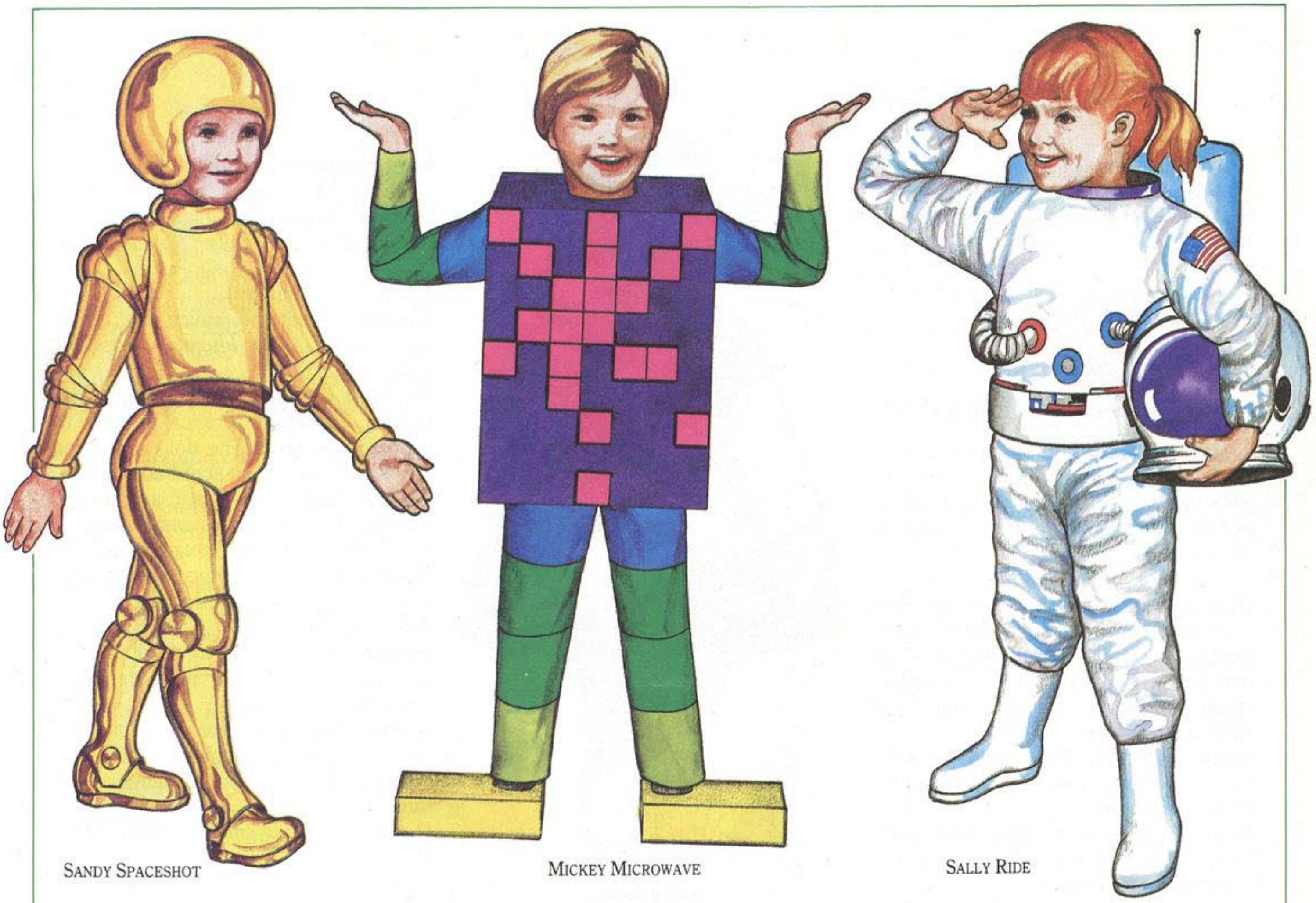
Program Listing for Graphics Demonstration

```
]LIST

500  REM  HAPPY FACE
1000  GR
1010  HOME
1015  HOME
1020  COLOR= 15
1030  HLIN 11,29 AT 8
1040  HLIN 11,29 AT 30
1050  VLIN 9,29 AT 11
1060  VLIN 9,29 AT 29
1070  PLOT 15,14: PLOT 16,14: PLOT 15,15:
      PLOT 16,15
1080  PLOT 24,14: PLOT 25,14: PLOT 24,15:
      PLOT 25,15
1090  VLIN 14,22 AT 20
1100  PLOT 19,22: PLOT 21,22
1110  HLIN 16,24 AT 27
1120  PLOT 15,26: PLOT 25,26
2000  REM  COLOR BARS
2010  GET A$
2020  GR
2030  HOME
2040  FOR I = 0 TO 15
2050  COLOR= I
2060  VLIN 0,39 AT I * 2
2070  VLIN 0,39 AT I * 2 + 1
2080  NEXT I
2090  PRINT " 0   2   4   6   8  10  12  14"
2100  PRINT "   1   3   5   7   9  11  13  15"
3000  REM  GRID DEMO
3010  GET A$
3020  HGR
3030  HOME
3040  HCOLOR= 3
3050  HPLOT 0,0 TO 279,0
3060  FOR I = 3 TO 159 STEP 4
3070  HPLOT 0,I TO 279,I
3080  NEXT I
3090  HPLOT 0,0 TO 0,159
3100  FOR I = 6 TO 279 STEP 7
3110  HPLOT I,0 TO I,159
3120  NEXT I
3130  HOME
3140  HCOLOR= 2
3150  VTAB 22
3160  PRINT "GR          ENTER GRAPHICS"
3170  GET A$
3180  PRINT "COLOR=6     SET COLOR TO BLUE"
3190  GET A$
3200  INPUT "PLOT ";X,Y
3210  IF X =  - 1 THEN 3290
3220  IF X < 40 AND Y < 40 THEN 3250
3230  PRINT "?ILLEGAL QUANTITY ERROR"
3240  GOTO 3200
3250  FOR J = Y * 4 TO Y * 4 + 3
3260  HPLOT X * 7,J TO X * 7 + 6,J
3270  NEXT J
3280  GOTO 3200
3290  REM  CLEAR SCREEN
3300  TEXT
3310  HOME
4000  REM  GRID SKILL TEST
4010  HOME
4020  GR
4030 X1 =  INT ( RND (1) * 35) + 5
4040 Y1 =  INT ( RND (1) * 40)
4050  COLOR= 4
4060  PLOT X1,Y1
4070 T = 0
4080 T = T + 1
4090  INPUT "PLOT ";X,Y
4100  IF X =  - 1 THEN 4290
4110  IF X < 40 AND X >  - 1 AND Y < 40
      AND Y >  - 1 THEN 4140
4120  PRINT "?ILLEGAL QUANTITY"
4130  GOTO 4090
4140  COLOR= 15
4150  HLIN 0,X AT Y
4160  FOR D1 = 1 TO 200: NEXT D1
4170  COLOR= 0
4180  HLIN C,X AT Y
4190  IF X = X1 AND Y = Y1 THEN 4260
4200  COLOR= 15
4210  PLOT X,Y
4220  COLOR= 4
4230  PLOT X1,Y1
4240  PRINT "MISS"
4250  GOTO 4080
4260  PRINT "HIT AFTER ";T;" SHOTS
4270  PRINT
4280  GOTO 4020
4290  TEXT : HOME
4300  NEW
4310  END
```

A COMPUTER CAROL

A PLAY FOR INTERMEDIATE GRADES ON THE HISTORY OF COMPUTERS



SANDY SPACESHOT

MICKEY MICROWAVE

SALLY RIDE

Bah! Humbug. That's what Ebenezer Scrooge says about Christmas. Titus Grump says the same thing about computers in this take off on A Christmas Carol by Charles Dickens—until he learns about the history of computers, that is!

BY LESLI ROTENBERG

Characters:
- Titus Grump
- Mrs. Moe Dern
- Mr. Moe Dern
- Noel
- Mickey Microwave
- Sandy Spaceshot
- Ooga
- Wama
- Chinese person
- Sally Ride
- Blaise Pascal
- Charles Babbage
- Lady Ava Lovelace
- Herman Hollerith
- Howard Aiken
- Dr. Presper Eckert
- Dr. John Mauchly
- Mr. Green
- Mrs. Green
- Gerta Green

Assign each student a part and perform the play for another class. (You can adjust the size of the cast by increasing or decreasing the number of doll characters. See characters list on this page.)

If you wish to keep costumes for the play simple, dress Noel (a Christmas doll) in red, Micky Microwave (a robot) in silver, and Sandy Spaceshot (a video game character) in bright colors. Dress the others in a similar simple fashion according to their nationality and time period. Performance time is 30 minutes.

To add to the production, ask your best artists to draw on posterboards the historical computers mentioned in the play. (See this month's poster for help.) Set up an easel, and appoint one student to post the picture of each machine as it is discussed. *(Continued)*

CLAIRE SIEFFERT

(Continued from page 29)

Time: December 24, 1983; 4 p.m.

Setting: The entire play takes place in a toy store. A table is stage right and a couch made of three chairs is center stage. The exit door is stage left. The entrance door is stage right.

SCENE I

A Christmas Present for Lerna

Dolls are posed in horizontal rows upstage. Downstage, Mr. and Mrs. Moe Dern are speaking with Mrs. Dern's father, Titus Grump, owner of the toy store.

Grump: And what about a Christmas present for my granddaughter, little Lerna? How about a nice doll? Here's a new one: Sally Ride. She comes with a space shuttle and a space suit. (*He pulls Sally's string.*)

Sally Ride: Hi. My name is Sally Ride. I'm the first woman astronaut to fly to the moon.

Mrs. Dern: Actually, Dad, Moe and I want to buy Lerna a computer for Christmas this year.

Grump: Rubbish, garbage, and fiddlesticks. No granddaughter of mine will get a computer for Christmas, not if I can help it.

Moe: Why not, Mr. Grump?

Grump: Suddenly, everyone is talking about computers. I just don't trust those new machines.

Moe: But, Mr. Grump, computers are not new at all. Computers are tools for calculating. And people have been counting things for a very long time.

Grump (*laughs hysterically*): I've been around longer than you, sonny boy, (*getting louder*) and I can assure you that this computer rage is just another fad that's sure to fade away like pet rocks and disco. This year, it's computers. Next year, everyone will ask, "Remember that silly computer rage?"

Mrs. Dern: Don't get so excited, Dad. It's not good for your heart. (*To her husband*) I think we should go now, dear. (*To her father*) We'll see you at dinner tomorrow. Goodbye. (*They exit.*)

Grump (*out of breath, he sits on the couch*): She's right. I am getting excited. I'd better rest. (*He falls asleep; snoring loudly.*)

NOEL

SCENE II

The Dolls Teach Grump About Computers

While Grump sleeps, the dolls begin to look around. They slowly start to stir. Sally Ride and Noel walk downstage center.

Sally Ride: I think it's time to teach ole Grumpy a lesson about computers. And because it's Christmas and you're so wise, I think you should do it, Noel.

Noel (*a Christmas doll*): OK, Sally. But I'll need some help.

Micky Microwave (*a robot with very choppy speech*): I'd love to help, No-el. I know all about com-pu-ters.

Sandy Spaceshot (*a character from a video game; with a squeeky voice*): I can help, too.

Sally: Maybe all the dolls can help.

Everyone (*agreeing in a manner appropriate to each character*): Yes.... Sure, we'll all help.... Lovely (*a British doll*)... *and so on.*

Noel (*shaking Grump*): It's time to wake up, Mr. Grump.

Grump: Who said that? (*He looks around at all the dolls. The dolls giggle.*)

Noel: I did, Grump.

Grump: Don't be ridiculous. Dolls can't talk. (*More laughter from the dolls*)

Noel: At Christmastime, anything can happen. Something magical is going to happen right now. The dolls are going to teach you a lesson about computers, Grump. Just follow my assistants. (*Grump follows Micky and Sandy as they walk toward the Stone Age dolls.*)

Sandy: You see, Grump, even people in the Stone Age used tools to help them count things.

Ooga: Yah, I keep track of all the dinosaurs I see by carving notches on the side of our cave.

Wama: And I don't like it one bit. The cave looked much nicer when you counted things with your fingers and toes.

Ooga (*with a big smile*): Yabba Dabba Do!

Noel (*leading Grump to a Chinese doll holding an abacus*): The Chinese invented the first machine for counting. It is called the abacus.

Oriental: To make an abacus, you string flat wooden beads onto wires. Then you attach the wires to a frame. We count numbers by moving the beads up and down, like this. (*Demonstrates counting with the abacus.*)

Micky: That's how the Chi-nese count-ed. And it worked very well. Then, a-bout the time the pil-grims were having their first Thanks-giv-ing din-ner in A-mer-i-ca, a young man in France in-ven-ted a mach-ine for count-ing. (*Pascal enters stage right.*) Here he is now. (*To Pascal*) Hello, Blaise Pascal.

Pascal: Bonjour.

Noel: How old are you, young man?

Pascal: I'm 19 years old.

Sandy: Tell us about your machine.

Pascal (*displaying a picture of his calculating machine*): Instead of the beads on the abacus, I use a wheel that turns one notch for each number. When the wheel turns past nine, it hooks a second wheel and turns it one notch. (*He exits stage right.*)

Noel: You see, Grump, as time went

on, man kept searching for a better tool for calculating. And all of his inventions led to the computer.

Sally: Wait a minute. What about women? Didn't women do anything to help create computers?

Sandy: Of course, they did. In fact, a woman helped design the first real computer in 1835. It was never built, but the plans for it were used to build other computers.

(Babbage and Lady Lovelace enter stage right.)

Sandy *(notices Babbage)*: Oh, excuse me, Mr. Babbage. I didn't know you were here.

Babbage: Not at all. I'd like you to meet my remarkable friend, Lady Ada Lovelace. Lady Lovelace helped me raise money and wrote about my work.

Lady Lovelace: Charles, I must interrupt. You've forgotten to tell them the most important thing I did. *(To others)* I convinced Charles to use the binary number system. That's a special number system that computers understand. *(They exit stage right.)*

Grump: I thought computers were made in America. But all of these inventors are foreigners.

Noel: Actually, Americans were the first to use a computer for a really big job. When it was time to take the census in 1890, the United States Census Office was still counting the people from 1880. So the office held a contest to invent a faster way.

Hollerith *(enters stage right)*: And I won! My name is Herman Hollerith and I'm from New York. I invented a machine to count 63 million Americans from information punched into cards. *(He exits stage right.)*

Grump: Wow! That's amazing. Imagine counting information about 63 million people. *(Everyone looks at Grump, and he puts his hand over his mouth, ashamed that he reacted. To cover up, he yawns as if he is bored. Eckert and Mauchly enter stage right.)*

Dr. Eckert: That's nothing. My computer can do five thousand calculations in a second.

Grump: Who are you?

Dr. Eckert: I'm Dr. Presper Eckert and this is Dr. John Mauchly. We created the first electronic digital computer at the University of Pennsylvania. We called the computer ENIAC.

OOGA

Dr. Mauchly: It used vacuum tubes instead of mechanical switches. ENIAC weighed over 30 tons.

Grump: You two work well together. No wonder you made the computers we use today.

Sandy: But they didn't. *(Eckert and Mauchly exit.)* The computer changed even more in 1961 when the transistor was invented. The transistor took up less space than vacuum tubes.

Noel: So the new computers were smaller and cheaper.

Grump: Like the one my granddaughter wants for Christmas.

Noel: No. She wants a microcomputer. Micros use tiny things called integrated circuit chips. They are even smaller, faster, and cheaper than computers made with transistors.

Grump: So the computer I buy for Lerna won't be as big as a gymnasium, or cost as much as a house?

Micky: Not at all. In fact, some com-pu-ters are as small as school books, and you can learn from them, too.

Grump: Can my granddaughter learn to count with a computer?

Micky: Oh, yes. And she can learn read-ing, writ-ing, his-tor-y, ge-og-ra-phy, sci-ence, and lots more.

Grump: What a practical toy!

Noel: Well, it's not really a toy. But it is fun to use. Banks use computers to manage your money. Hospitals use computers to care for sick people.

Sally: And astronauts use computers to explore space.

Sandy: You could use a computer in your store to help you run your toy business. *(There is a knock on the door. Suddenly, the dolls freeze.)*

SCENE III

Grump Teaches the Greens About Computers

Grump opens the door. A man, a woman, and a child enter stage left.

Mr. Green: Hello. We're looking for a doll for my daughter, Gerta.

Mrs. Green: Do you have the one that cries, takes a bath, and eats real food at the same time?

Grump: Oh, that's a silly doll. I have a better idea for a Christmas present. Why don't you buy Gerta a computer?

Mr. Green: A computer? Why?

Grump: Computers are wonderful tools. Did you know that people have been using tools to calculate since the Stone Age?

Mrs. Green: I didn't know that.

Grump: But computers have changed a lot over the years. Now we have microcomputers. They are much smaller and less expensive than the first computers. But they are more powerful.

Gerta: Oh, I would love to have a computer for Christmas. Would you buy one for me, mommy and daddy, please?

Mr. Green: It sounds like a wonderful idea. *(To Grump)* Thank you for helping us, sir.

Mrs. Green: Goodbye and Merry Christmas. *(They exit stage left.)*

Grump *(waving to them from the door)*: Merry Christmas to you!

(The dolls giggle.)

Curtain

LEARNING CENTER

Write On, Computer!

By Sandra Markle

Each month in Learning Center, computer teacher and writer Sandra Markle will give you a programming lesson in BASIC.

Last month's column taught kids how to use PRINT statements to solve math problems. But performing arithmetic isn't all PRINT statements are used for. They also can be used to make the computer write words and keyboard characters. That's what we'll explore this month. The November-December column provides a group lesson and four student task cards on writing messages.

SETTING UP

Last month you designated a section of a nearby bulletin board as the "Command Post" where new command words and symbols would be displayed. We defined PRINT for the Command Post as a "command that makes the computer show answers to number problems." Now that we will be studying a second aspect of PRINT, you'll need to add this sentence to your PRINT definition: "PRINT also tells the computer to show words, numbers, or symbols that are inside quotation marks."

A GROUP LESSON

Computers can work like a big calculator or a message display board. In each case, the PRINT commmand is important.

1. The computer can be a calculator. To refresh students' memory about using PRINT commands in math operations, write the following on the board:

```
PRINT 5+7
PRINT 6-3
PRINT 3 * 2
PRINT 3/1
```

- Ask children what each statement tells the computer to do. *(Add, subtract, multiply, divide)* Then ask students to predict the computer output of each. *(12, 3, 6, 3)* Have students check their estimates by performing the problems on the computer.
- Add line numbers 10, 20, 30, and 40 to the four commands, in that order. Ask students what happens next. *(Nothing, unless you type in RUN and press RETURN or ENTER. Once you do that, the computer will print out 12, 3, 6, 3, in that order.)* Check your answers on the computer.
- Ask students what happens if you switch the order of the line numbers, making, say, line 10 into line 40, and so on.... *(When you type RUN and press RETURN or ENTER, the computer will still print out the answers in numerical order, beginning with the new line 10.)* Check your answer on the computer.

2. The computer can be a message display board. To display messages, however, you use the PRINT statement a little differently. The words or characters that you want to print must be in quotation marks. For example, the command: PRINT "MY COMPUTER EATS BANANAS" tells the computer to print out the words MY COMPUTER EATS BANANAS.

- Write the following sentence on the board:

Hungry Hal said, "I'm going to eat a whole turkey for Thanksgiving dinner!"

Have a student read the sentence aloud. Ask students why part of the sentence is marked off by quotation marks. *(The quotes indicate the exact words Hal spoke.)*

Have another student read only those parts of the sentence that Hungry Hal said.

- Change the sentence to read:

Hungry Hal said: "Mmmm! I'll eat 10 turkeys on Thanksgiving!"

Once again have a student say only what Hal said. Point out that even though "Mmmm!" and "10" are not words, we know that Hungry Hal said them because they are inside the quotation marks.

- Erase "Hungry Hal said" and write the computer command PRINT in its place. See if students can predict what would happen if you type the sentence into a computer. Type it into a computer and find out. *(Type: PRINT "Mmmm! I'll eat 10 turkeys on Thanksgiving!")*
- Have students make up other PRINT statements on the board by changing the message inside the quotation marks. Each time, enter the PRINT statements into the computer to see the results.

USING THE TASK CARDS

Cut out the four task cards on the following pages, laminate them, and file them in a box near your computer. Put your computer in BASIC and kids are ready to follow the cards!

The directions on the cards are simple enough for children in grades four and up to follow independently. Allow students a full 20 to 30 minutes for each card.

Here's a summary of the task card objectives:

Task Card #7: Students learn that the PRINT statement tells the computer to print whatever is inside quotation marks, even if it's spelled wrong.

Task Card #8: Students use the PRINT command and keyboard characters to make oversized initials.

Task Card #9: Students use the PRINT command and keyboard characters to make pictures.

Task Card #10: Students learn to write a short program using PRINT statements and words. ■

Sandra Markle is the author of several computer books for children.

LEARNING CENTER TASK CARD

7

DROP ME A LINE

You can make the computer print any message you put in quotation marks. Here's how:

1. Type:

```
PRINT “HI, COMPUTER!”
```

2. Type:

```
RUN
```

PRINT tells the computer to print. The quotation marks tell the computer to print what's inside them.

The computer is not very smart though. It will print anything that is inside the quotation marks. Try this:

1. Type:

```
PRINT “HI, COMPUTR!”
```

2. Type:

```
RUN
```

Extension: Make the computer print your name.

LEARNING CENTER TASK CARD

8

V.I.I. (VERY IMPORTANT INITIALS)

Question: What are the three letters a computer cannot do without? Type in the following program and find out. Be sure to supply the correct amount of spaces between Xs.

1. Type:

```
10 PRINT “xxxxxx xxxxxx x    x
20 PRINT “x      x    x x    x
30 PRINT “x      xxxxxx x    x
40 PRINT “xxxxxx x      xxxxxx
50 END
```

2. Type:

```
RUN
```

Answer: The three letters a computer cannot do without are CPU. CPU stands for Central Processing Unit. The CPU is the computer's brain. It is where the computer does all its work.

Challenge: Make up a similar program that will display another important set of initials in Xs—the initials that stand for your name! (Draw your initials in Xs on a piece of paper first. Then use the paper as a model for your computer program.)

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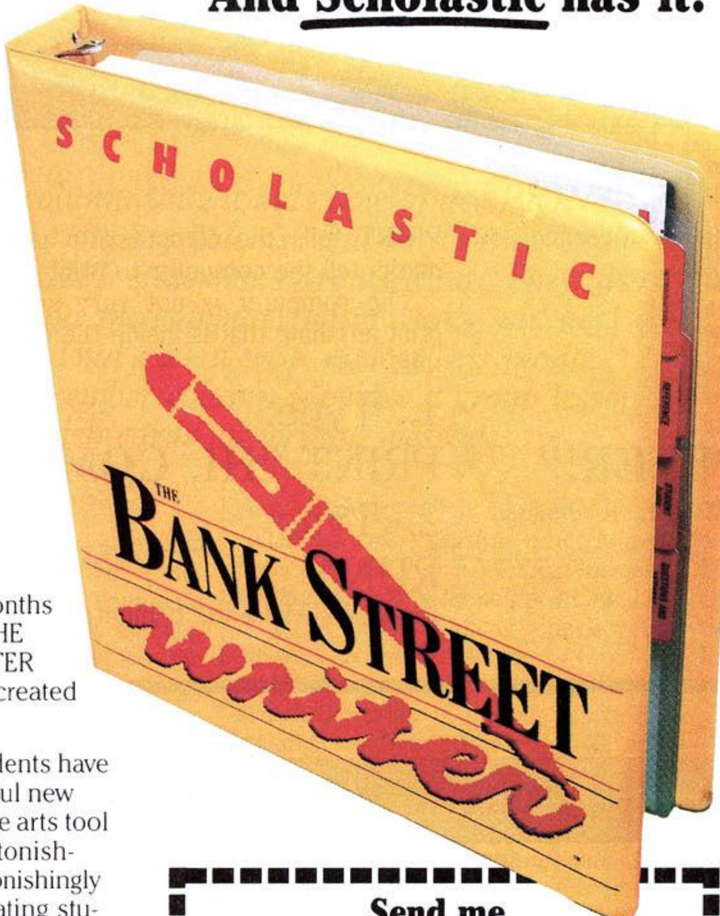

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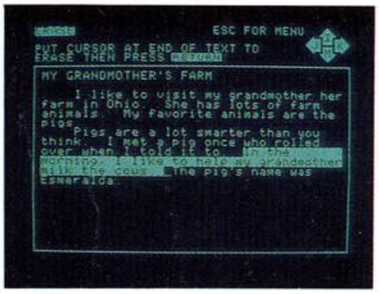

```
ERASE                          ESC FOR MENU
PUT CURSOR AT END OF TEXT TO
ERASE THEN PRESS RETURN
MY GRANDMOTHER'S FARM
     I like to visit my grandmother her
farm in Ohio.  She has lots of farm
animals.  My favorite animals are the
pigs.
     Pigs are a lot smarter than you
think.  I met a pig once who rolled
over when I told it to.  In the
morning, I like to help my grandmother
milk the cows.  The pig's name was
Esmeralda.
```

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Circle 15 on Reader Service Card.

LEARNING CENTER TASK CARD

9

PUT ON A HAPPY FACE!

Question: How do you feel when it's your turn at the computer? Type in the following program and find out.

1. Type:

```
10 PRINT "X    X"
20 PRINT " X  X"
30 PRINT " XXXX"
40 END
```

2. Type:

```
RUN
```

Answer: As happy as the smile on your computer screen!

Challenge: Make up a program that will display a smile, two eyes, and a nose.

LEARNING CENTER TASK CARD

10

JUST FOR LAUGHS

1. Type:

```
10 PRINT "WHAT WERE THE NEW COMPUTER'S FIRST WORDS?"
20 PRINT "I DON'T KNOW. WHAT WERE THEY?"
30 PRINT "DATA DATA."
40 END
```

2. Type:

```
RUN
```

Challenge: Make up a program that displays your favorite riddle.

PROGRAM OF THE MONTH

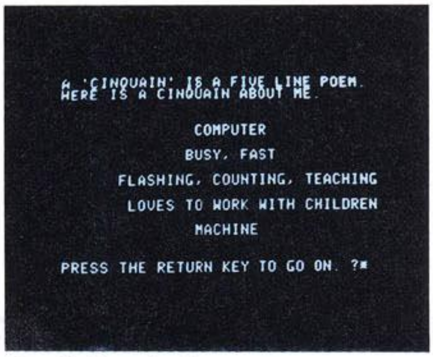
Write a Cinquain

By Elinor Pfluger

Bring out the poet in every child with a simple program that teaches students how to write a cinquain.

Write a Cinquain (pronounced *sin kane*) teaches students more than just how to write a cinquain. It reviews the parts of speech, builds vocabulary, and gives kids an opportunity for reflection and self-expression.

All cinquains have five lines *(cinq* is French for five). Standard cinquains are similar to Japanese tankas in that the first and last two lines have two syllables and the middle three have four, six, and eight syllables respectively.



```
A 'CINQUAIN' IS A FIVE LINE POEM.
HERE IS A CINQUAIN ABOUT ME.

              COMPUTER

             BUSY, FAST

      FLASHING, COUNTING, TEACHING

       LOVES TO WORK WITH CHILDREN

              MACHINE

PRESS THE RETURN KEY TO GO ON. ?
```

Sample cinquain about a computer.

The cinquain presented in the *Write a Cinquain* program is a simple variation. Instead of syllable specifications, there are specifications on the parts of speech. The first line is a single-word noun, the second line contains two adjectives, the third line contains three participles, the fourth line is a short phrase describing the subject, and the last line is another noun.

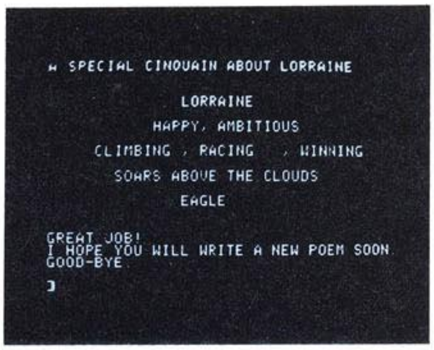
PROGRAM DESCRIPTION

The program is divided into three parts. The first part presents students with a sample cinquain about a computer. In the second part, students create their own cinquain by entering words, one at a time, as the computer asks for them. In the last part, the computer displays the student's poem on the screen.

SUGGESTIONS FOR CLASSROOM USE

Here are a few activities for using the *Write a Cinquain* program in a language arts classroom.

- Have students write other cinquains about their pets, parents, favorite vacation spot, or computer.
- Write the words "noun," "verb," and "adjective" on the board. Have each student write an appropriate word under each. Leave the lists on the board for a day and have students add words as they think of new ones.
- Modify the program for writing haikus, three-line programs in which the first and third lines have five syllables and the second line has seven. Start by writing a sample haiku. Then assign a variable to each word in the poem using as many INPUT statements as necessary. The last step is to program the computer to print out the variables in order so that the poem is displayed on the screen.
- Have students draw pictures to go with their poems. Designate a Poetry Day on which students present their poems and drawings to other classes. Add music and slides to the presentations.
- Have students write three poems about themselves, one that describes how they really are, another that describes how they think other people see them, and a third that describes how they would like people to see them. Read the poems out loud without saying the person's name and have students guess who the poem is about.



```
A SPECIAL CINQUAIN ABOUT LORRAINE

            LORRAINE

         HAPPY, AMBITIOUS

    CLIMBING , RACING   , WINNING

       SOARS ABOVE THE CLOUDS

             EAGLE

GREAT JOB!
I HOPE YOU WILL WRITE A NEW POEM SOON.
GOOD-BYE.

]
```

A cinquain created using the Write a Cinquain *program.*

A PROGRAMMING LESSON

Divide the program into three sections: lines 200-360, 370-680, and 690-END.

Lines 200-360: Explain to students that, in the first section, PRINT statements followed by a colon tell the computer to skip a line. Ask students what the INPUT K$ lines (280 and 350) do. Why do they think it's called an "empty string" of text? *(The variable K$ tells the computer to pause and wait for input from the user. Rather than enter a letter or word, the user presses RETURN or ENTER, thereby assigning no value to K$. A string variable without a value is called an empty string.)*

Lines 370-680: Have students make up a variable chart that lists all the variables on one side and what they stand for on the other. Here's a sample chart:

Variable	Function
N1$	The first noun
A1$	The first adjective
A2$	The second adjective
A3$	The third adjective
V1$	The first 'ing' verb
V2$	The second 'ing' verb
V3$	The third 'ing' verb
V4$	The action verb
P$	Short phrase
N2$	The second noun

Lines 690-END: This section displays the student's poem. Using their variable chart, have students rewrite on paper the lines 690 to 740, exchanging the variables in those lines with their functions. For example, the first line would read:

690 PRINT "A SPECIAL CINQUAIN ABOUT"; FIRST NOUN

***Elinor Pfluger** is a kindergarten teacher and computer coordinator at Moorhead Elementary School in Indianapolis, Indiana.*

Send program listings, descriptions, and tips for class use to Program of the Month, *Teaching and Computers*, 730 Broadway, New York, NY 10003.

PROGRAM LISTING FOR *WRITE A CINQUAIN*

This program listing is for TRS-80 Model III computers. Modifications for Apple, Commodore, and Atari microcomputers are available by writing to *Teaching and Computers*, 730 Broadway, New York, NY 10003.

You may also request an additional program that allows students to save and retrieve their poems.

```
200 CLS
210  PRINT "A CINQUAIN IS A FIVE-LINE POEM.  HERE'S A CINQUAIN ABOUT ME:"
220  PRINT : PRINT @271,"COMPUTER"
230  PRINT @398,"BUSY, FAST"
240  PRINT @519,"FLASHING, COUNTING, TEACHING"
250  PRINT @648,"LOVES TO WORK WITH CHILDREN"
260  PRINT @793,"MACHINE"
270  PRINT : PRINT "(PRESS THE ENTER KEY TO GO ON.)";
280  INPUT K$
290 CLS
300  PRINT "NOW I'LL HELP YOU WRITE YOUR OWN POEM!  IT CAN BE ABOUT"
310  PRINT "YOU, YOUR TOWN, OR EVEN YOUR FAVORITE SEASON!"
320  PRINT : PRINT "WRITING CINQUAINS IS EASY!  JUST TYPE IN THE WORDS"
330  PRINT "I ASK FOR.  WHEN YOU'RE DONE, I'LL PRINT YOUR POEM!"
340  PRINT : PRINT "(PRESS THE ENTER KEY TO GO ON.)"
350  INPUT K$
360 CLS
370  PRINT "A NOUN IS THE NAME OF A PERSON, PLACE, OR THING. TYPE A NOUN."
380  PRINT "(REMEMBER TO PRESS ENTER EACH TIME YOU TYPE IN A WORD.)
390  INPUT N1$
400  PRINT : PRINT "ADJECTIVES ARE WORDS LIKE HAPPY AND SMART THAT DESCRIBE"
410  PRINT "NOUNS.  TYPE A FUN ADJECTIVE THAT DESCRIBES ";N1$;"."
420  INPUT A1$
430  PRINT : PRINT "TYPE ANOTHER ADJECTIVE THAT TELLS ABOUT ";N1$;"."
440  PRINT "USE A FANCY WORD OR ONE YOU JUST LEARNED."
450  INPUT A2$
460  PRINT "TYPE A VERB THAT ENDS IN 'ING,' SUCH AS JUMPING OR SINGING."
470  PRINT "USE AN EXCITING WORD THAT ";N1$;" LIKES TO DO."
480  INPUT V1$
490  PRINT : PRINT "TYPE ANOTHER VERB THAT ENDS IN 'ING.'"
500  PRINT "THINK OF THINGS THAT ";N1$;" DOES ON SPECIAL DAYS."
510  INPUT V2$
520  PRINT "TYPE ONE MORE VERB THAT ENDS IN 'ING.'  THINK ABOUT THINGS"
530  PRINT "THAT ";N1$;" DOES ALL THE TIME."
540  INPUT V3$
550  PRINT : PRINT "ACTION VERBS TELL WHAT THE NOUN DOES.  EXAMPLES"
560  PRINT "OF ACTION VERBS ARE KICK AND DIVE.  TYPE AN ACTION VERB THAT"
570  PRINT "ENDS IN 'S.'  MAKE SURE IT'S SOMETHING THAT"
580  PRINT N1$;" CAN DO AND THAT'S FUN."
590  INPUT V4$
600  PRINT : PRINT "TYPE A PHRASE THAT STARTS WITH ";V4$
610  PRINT "AND TELLS ABOUT ";N1$;"."
620  INPUT P$
630  PRINT "TYPE A NOUN THAT STANDS FOR ";N1$;"."
640  PRINT "FOR EXAMPLE, MACHINE STANDS FOR COMPUTER."
650  INPUT N2$
660  PRINT : PRINT "THANK YOU."
670  FOR Z = 1 TO 1000: NEXT Z
680 CLS
690  PRINT "A SPECIAL CINQUAIN ABOUT ";N1$
700  PRINT : PRINT @271,N1$
710  PRINT @396,A1$;", ";A2$
720  PRINT @518,V1$;", ";V2$;", ";V3$
730  PRINT @648,V4$;" ";P$
740  PRINT @783,N2$
750  PRINT : PRINT : PRINT "GREAT JOB!"
760  FOR Z = 1 TO 4000: NEXT Z
1100  PRINT : PRINT "I HOPE YOU WILL WRITE A NEW POEM SOON...."
1110  END
```

Explore Angles and Light with Spotlight

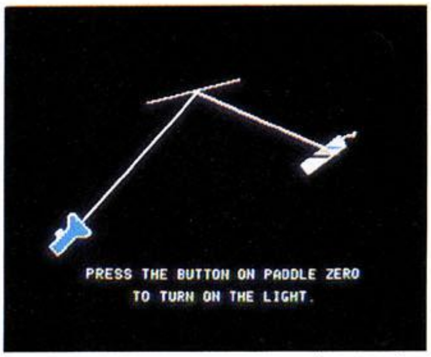
By Amy Dombro and Barbara Dubitsky

AGE LEVEL: 9 to 13
PURPOSE: To allow students to explore the properties of angles and light reflection.
CURRICULUM AREAS: Math; Science
HARDWARE AND PERIPHERALS: Apple II (48K); Apple II Plus (48K; Integer BASIC firmware or the Apple Language System); Apple IIe (paddles)
PUBLISHER: Children's Television Workshop
ADDRESS: One Lincoln Plaza, New York, NY 10023.
PRICE: $50

PROGRAM DESCRIPTION

"Spotlight" and "Reflect" are two of four programs on a disk called Spotlight.

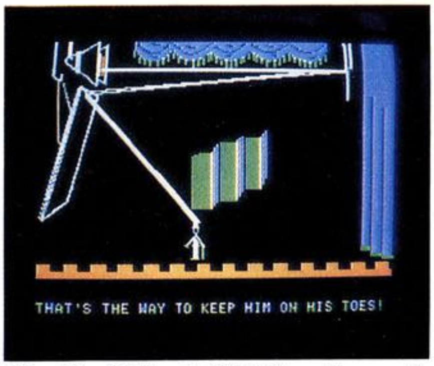
The object of the "Reflect" game is to adjust a mirror so that a beam of light reflects off the mirror and hits a stationary target, such as a hat, a birthday cake, or a stick of dynamite. If successful, the student is rewarded with an animated graphic and sound effects. For example, a rabbit jumps out of the hat, candles on the cake light up, and the stick of dynamite explodes.



PRESS THE BUTTON ON PADDLE ZERO
TO TURN ON THE LIGHT.

Students adjust the angle of the mirror so that the reflecting light hits a stick of dynamite in "Reflect."

In "Spotlight," the computer generates a stage, complete with lights, mirrors, and a man named Steve, who has a top hat and cane. The object is to adjust one of the mirrors so that a beam of light either shines directly on the man, who moves about the stage, or reflects off another mirror and then hits the man. When hit with the spotlight, Steve does a soft shoe routine to a simple tune.



THAT'S THE WAY TO KEEP HIM ON HIS TOES!

When hit with the spotlight, Steve does a soft-shoe routine.

Both programs demonstrate that the angle at which light hits a mirror is equal to the angle at which the light is reflected off the mirror.

USING THE PROGRAM IN THE CURRICULUM

Here are suggested activities for using "Spotlight" and "Reflect" in math and science classrooms.

Mathematics Activities

"Spotlight" and "Reflect" can supplement and reinforce a mathematics unit on angles.

- Before playing either of the games, ask students to observe angles in their environment—at school, at home, and in town. Organize an "Angle Hunt" in which teams of children find 10 angles in the classroom.
- Order the angles from smallest to largest. What does it mean for one angle to be bigger than another? *(The lines are farther apart.)* Children can learn to measure angles or draw angles of a particular number of degrees using a protractor. What other tools can you use? *(Compass, mitre box, plumb lines)*
- Once all the children have played the programs, ask the following questions: What happens to the center angle made by reflected light as you move the mirror? *(It gets bigger or smaller.)* What do you notice about the size of the two side angles? *(Although the size of the angles should be the same, the poor resolution of the graphics may distort the angles.)* What happens in a knock hockey or pool game when the puck or ball hits the side of the table? *(If the object is not spinning, it bounces off the side at the same angle.)*
- Roll a ball toward a wall at many different angles. Notice the angle at which it leaves the wall. Draw two chalk lines that meet at a point on the wall and form equal angles with the wall. See if rolling the ball along one line makes it leave the wall along the other line. *(It does, if the ball is not spinning.)*
- If you have a Logo program, have students practice creating angles with the Logo turtle. Ask students to make 90-degree, 45-degree, and 30-degree angles.
- Explore how the study of angles applies to real life. What professionals measure angles? *(Surveyors, archaeologists, tailors, carpenters, navigators, astronomers)* What tools or equipment does each use to measure angles? *(Surveyor's levels, compasses, mitre boxes, plumb lines, telescopes)*

Science Activities

"Spotlight" and "Reflect" make a good introduction to a science unit on reflection. They let students explore what happens to light when it is reflected off a mirror at different angles.

- Use a mirror and a narrow-beam flashlight in a darkened room to reproduce the "Spotlight" and "Reflect" experiments in real life.
- Ask students if they can see their reflection in a window when the light is on and it's dark outside. Can someone see them from the outside? As a homework assignment, ask students to stand one, two, three, and then four feet from a window in a lighted room at night. Have them write down what they see at each point. *(As they move backward, their image should get smaller and brighter.)*
- Take time out for discussion. Ask students why they think driving at night with a dome light on inside the car is illegal. *(The light makes it difficult for oncoming cars to see the road.)*

- Ask students what happens when the reflecting surface is curved. *(The reflection becomes distorted.)*
- Tape several pocket mirrors to a wall about head high and 12 inches apart. Give one person a flashlight to shine into the mirrors, trying to hit someone else with the reflection. Have students take turns shining the flashlight into different mirrors.
- Study the reflection of light in nature. Ask student groups to find out why you see the phases of the moon, why you see yourself in a lake, and how a mirror works. Have them report back to the class with their findings.
- Have students make a periscope in order to see from behind desks. (See illustration.)

1. Cut parallel slats at a 45-degree angle on one side of a milk carton.

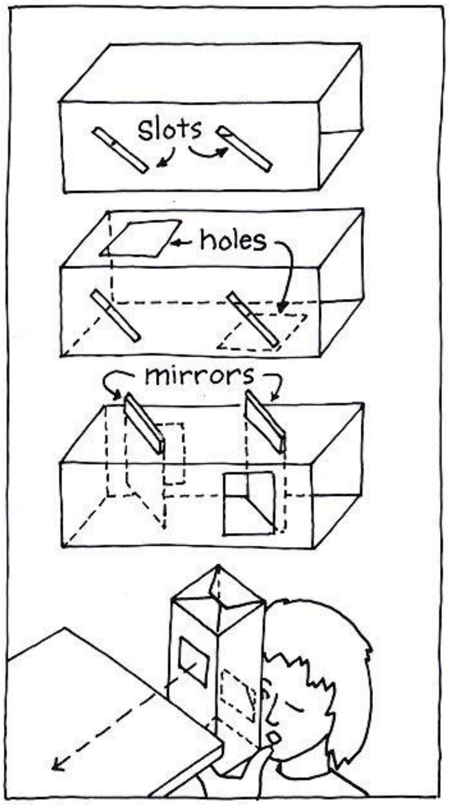


Illustration of a periscope.

2. Make square holes in front of the mirrors to see through.

3. Put two small mirrors in face-to-face.

- Make a kaleidoscope with multicolored patterns. (See illustration.)

1. Tape three rectangular pocket mirrors together on their long side so that the mirror parts are facing inward.

2. Put the mirrors inside a cardboard tube. (Use more tape around the mirrors if they don't fit snugly.)

3. Fasten a piece of plastic wrap or waxed paper at one end of the tube. Drop in a few bits of colored paper.

4. Look through the other end of the tube toward a light to see an ever-changing geometric display.

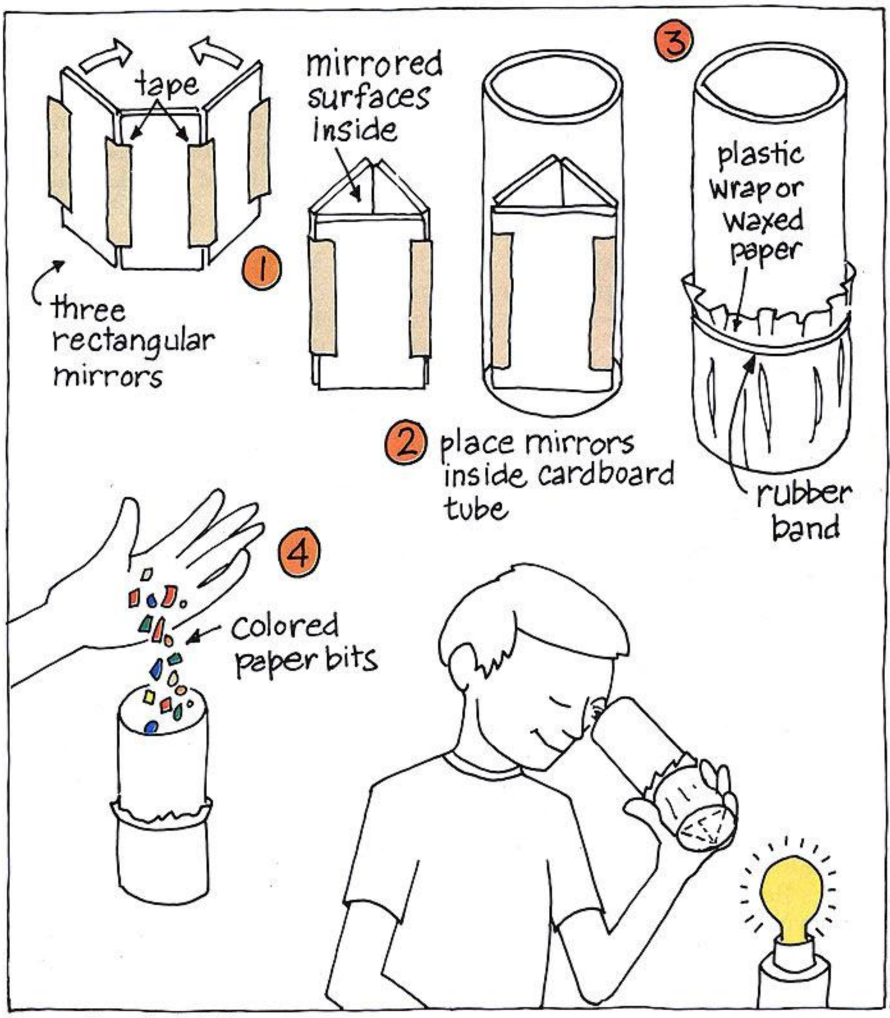

tape
mirrored surfaces inside
three rectangular mirrors
1
2 place mirrors inside cardboard tube
3
plastic wrap or waxed paper
rubber band
4
colored paper bits
DAVID LINDROTH

Illustration of a kaleidoscope.

RELATED PROGRAMS

1. *Light*; Apple II, Cross Educational Software, P.O. Box 1536, Ruston, LA 71270. $45.

2. *Light*; Apple II, Right On Programs, P.O. Box 977, Huntington, NY 11743. $15 disk or $13 cassette.

3. *Elementary Volume 8—Angles* and *Quiz on Angles*; Apple II 32K, MECC, 2520 Broadway, St. Paul, MN 55113. $33. ■

***Amy Dombro** is the head teacher of the Infant Center at the Bank Street College of Education, New York City. **Barbara Dubitsky** is the director of the Graduate Certificate Program in Computers in Education at Bank Street College.*

PULL OUT →

ELECTRONIC CALENDAR-TEACHER'S GUIDE

Computing in November & December

By Lorraine Hopping

The November/December electronic calendar gives students an overview of computer history from prehistoric times to the present through quick quizzes, silly jokes, word challenges, and other computer activities. This page lists answers to the quizzes and short assignments that appear on the calendar.

NOVEMBER 4

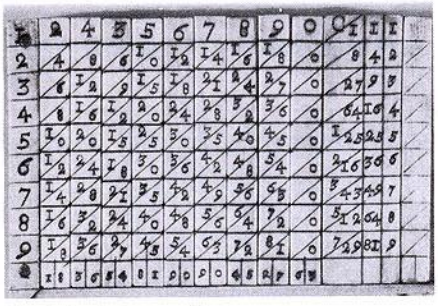
Have students gather the sticks, stones, and pebbles needed for this activity during recess or before school. To make a number with these materials, for example seven, you would lay out a stone (worth five) and two sticks (worth one each). The number 38 would be three pebbles (worth 10 each), a stone, and three sticks.

NOVEMBER 7

The Chinese invented the abacus for calculating. Using an abacus or a sketch of an abacus like the one on the *T&C* poster, point out that the column of beads on the right side represents the ones place value of a number, the second from the right represents the tens, the third from the right represents the hundreds, and so on. Explain that the beads on top are worth five times more than the beads on the bottom. That means that instead of pushing up five beads from the bottom to make the number five, you can just push down one bead from the top.

NOVEMBER 10

Napier's Bones or Rods were sticks of ivory with notches in them. The notches were arranged in such a way that people could find the products of multiplication problems on them.



Napier's Bones or Rods.

NOVEMBER 16

Blaise Pascal invented the first gear-driven calculator. Modern milometers (mile gauges) still use similar gear arrangements to make their calculations.

NOVEMBER 18

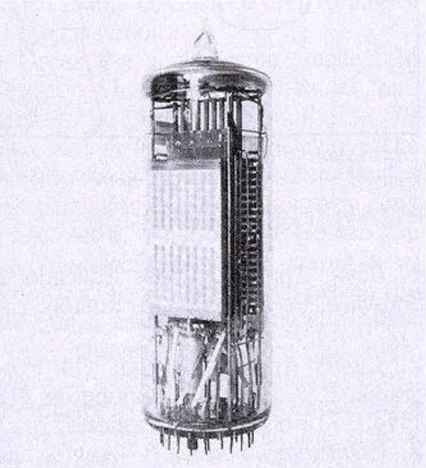
Joseph Marie Jacquard invented punched cards in 1801 for use with a weaving loom. As the cards passed through the loom, the hole punches created weaving patterns.

NOVEMBER 22

Charles Babbage designed, but never built, the Analytical Engine. This machine was to be powered by steam and programmed by punched cards. Although the Analytical Engine had a sound design, engineers did not have the technology at that time to create some of its intricate parts.

DECEMBER 5

First generation computers like ENIAC and UNIVAC weighed several tons and used vacuum tubes to transmit electricity.



A vaccuum tube.

DECEMBER 11

BASIC was invented as an easy computer language for students and other computer novices to learn.

DECEMBER 13

The smallest third generation computers were minicomputers, used by businesses in the 1960s.

DECEMBER 19

Here's a sample chart comparing the four generations of computers.

GENERATION	SPEED	FEATURE
First	Fast	Vacuum Tubes
Second	Faster	Transistor
Third	Faster Yet!	Integrated Circuits
Fourth	Fastest	Computer Chips

Chart comparing the four generations of computers.

DECEMBER 23

To make a computer encyclopedia, have each student choose a machine, person, or event in computer history. Make sure all time periods are covered, from prehistoric to present-day. Have students research and write reports on their topic.

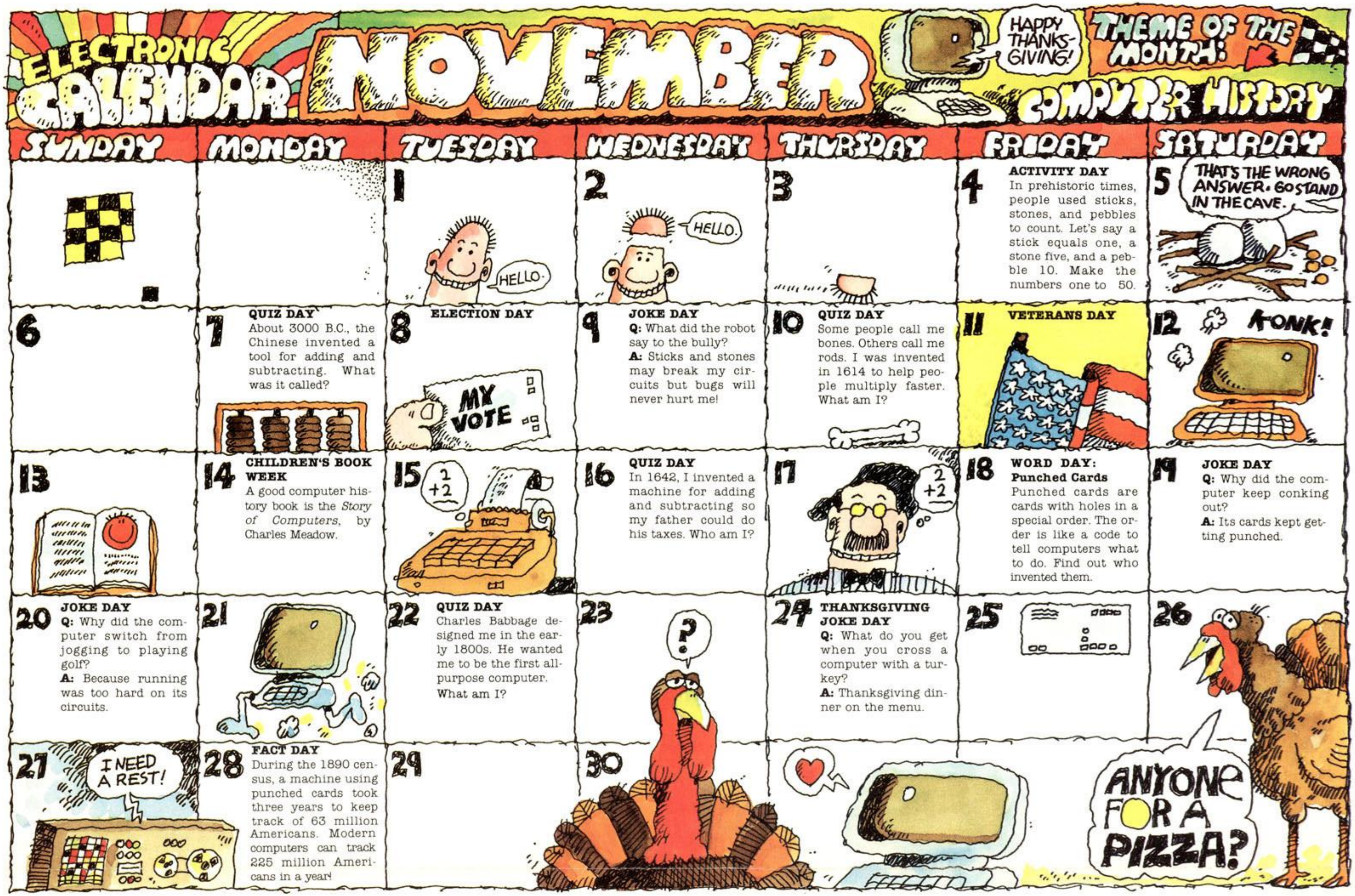
Alphabetize all the reports and put them into a loose-leaf notebook. Write on the cover "Computer Encylopedia." As students learn and write about computers in society, computers in the future, computer careers, and other computer-related topics, add new entries to the encyclopedia.

DECEMBER 26

Charles Babbage is called the Father of Computing primarily for his design for the Analytical Engine (see November 22). ■

Lorraine Hopping is assistant editor for *Teaching and Computers.*

PHOTOGRAPHS BY THE COMPUTER MUSEU



ELECTRONIC CALENDAR NOVEMBER

THEME OF THE MONTH: COMPUTER HISTORY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4 **ACTIVITY DAY** In prehistoric times, people used sticks, stones, and pebbles to count. Let's say a stick equals one, a stone five, and a pebble 10. Make the numbers one to 50.	5
6	7 **QUIZ DAY** About 3000 B.C., the Chinese invented a tool for adding and subtracting. What was it called?	8 **ELECTION DAY**	9 **JOKE DAY** **Q:** What did the robot say to the bully? **A:** Sticks and stones may break my circuits but bugs will never hurt me!	10 **QUIZ DAY** Some people call me bones. Others call me rods. I was invented in 1614 to help people multiply faster. What am I?	11 **VETERANS DAY**	12
13	14 **CHILDREN'S BOOK WEEK** A good computer history book is the *Story of Computers*, by Charles Meadow.	15	16 **QUIZ DAY** In 1642, I invented a machine for adding and subtracting so my father could do his taxes. Who am I?	17	18 **WORD DAY: Punched Cards** Punched cards are cards with holes in a special order. The order is like a code to tell computers what to do. Find out who invented them.	19 **JOKE DAY** **Q:** Why did the computer keep conking out? **A:** Its cards kept getting punched.
20 **JOKE DAY** **Q:** Why did the computer switch from jogging to playing golf? **A:** Because running was too hard on its circuits.	21	22 **QUIZ DAY** Charles Babbage designed me in the early 1800s. He wanted me to be the first all-purpose computer. What am I?	23	24 **THANKSGIVING JOKE DAY** **Q:** What do you get when you cross a computer with a turkey? **A:** Thanksgiving dinner on the menu.	25	26
27	28 **FACT DAY** During the 1890 census, a machine using punched cards took three years to keep track of 63 million Americans. Modern computers can track 225 million Americans in a year!	29	30			

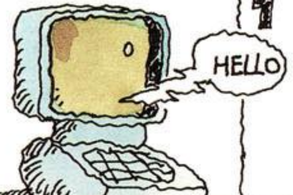
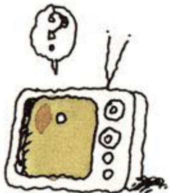
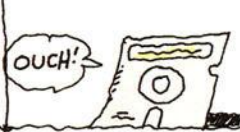
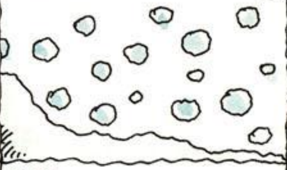
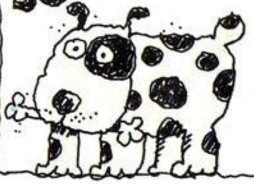
ELECTRONIC
MERRY CHRISTMAS!
THEME OF THE MONTH:

computers can track 225 million Americans in a year!

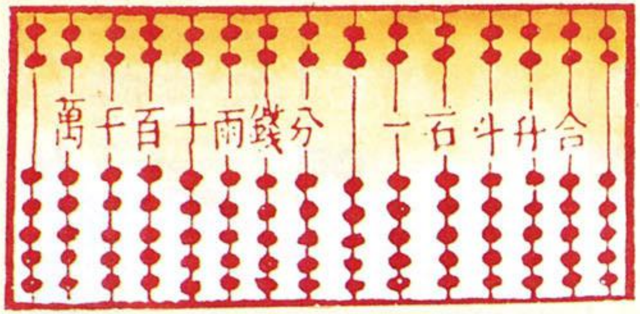
ELECTRONIC CALENDAR
DECEMBER

MERRY CHRISTMAS!

THEME OF THE MONTH: COMPUTER HISTORY

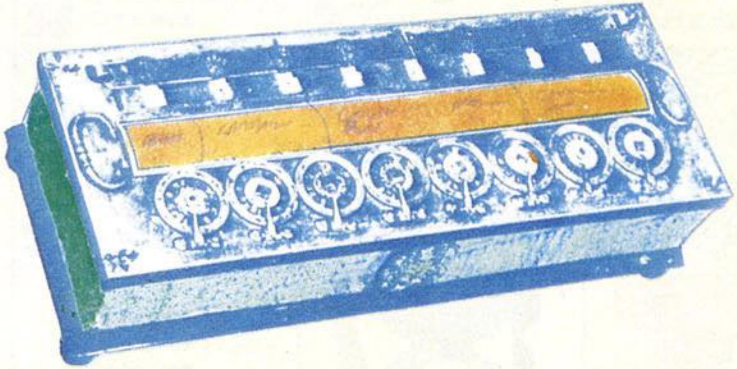
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	  GOODY, A MICRO BUG HELP!			**1** **HANUKKAH BEGINS**	**2** **FACT DAY** In 1937, Howard Aiken built the first computer to use electric and mechanical (moving) parts. The Mark I had 78 adding machines built into it!	**3**
4 	**5** **WORD DAY: Generation** A generation is a group of things or people from the same time period. ENIAC and UNIVAC are two first generation computers. What were they like?	**6**  	**7**  	**8** **WORD DAY: Transistor** A transistor is a device that receives and sends electricity. Second generation computers used transistors to do 10,000 problems per second!	**9** WHAT DO YOU WANT?	**10** **LADY ADA LOVELACE'S BIRTHDAY** Lady Lovelace was born in 1815, 24 years after Charles Babbage. She helped Babbage design the Analytical Engine.
11 **QUIZ DAY** I was invented in 1963 to help humans "talk to" computers. I am the most common computer language for microcomputers. What am I?	**12** HI WELL, I'LL BE!	**13** **QUIZ DAY** Third generation computers had tiny "integrated circuits" (ICs) that made them faster, smaller, and cheaper. What were the smallest third generation computers called?	**14** **FACT DAY** We are using fourth generation computers today. They have small chips that can make up an entire computer less than ½" in size!	**15** **JOKE DAY** **Q:** Why was the computer using a cane? **A:** Because it had a slipped disk. *Stacy Teague, Lanham, MD*	**16**	**17** HAPPY BIRTHDAY, LADY.
18 	**19** **ACTIVITY DAY** Make a chart comparing first, second, third, and fourth generation computers. Compare size, speed, cost, and uses.	**20**	**21**  	**22** **WINTER BEGINS** 	**23** **ACTIVITY DAY** Make a computer encyclopedia! (Ask your teacher for instructions.) MRS. SARFATI WHAT?	**24** **CHRISTMAS EVE**
25 **CHRISTMAS** 	**26** **BIRTHDAY: Charles Babbage** Charles Babbage was born in 1791. Some people call him the Father of Computing. Do you know why?	**27** 	**28**	**29** **JOKE DAY** **Q:** Why did the dog give its bone to the robot? **A:** The robot needed a byte to eat.	**30** 	**31** **NEW YEAR'S EVE**

◇ History of the Computer ◇



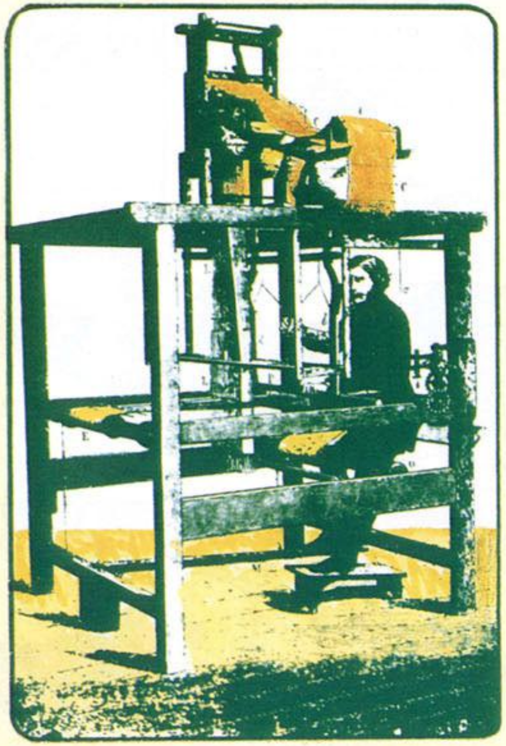
2600 B.C.

CHINESE ABACUS
Beads were moved up and down rods to add and subtract.



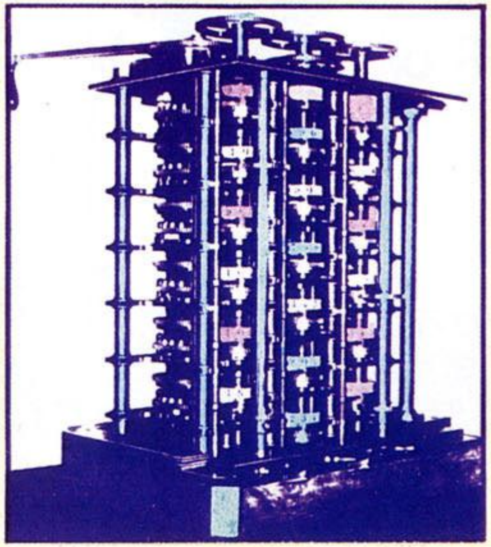
1642 A.D.

LA PASCALINE
Blaise Pascal arranged a series of gears and dials in a small box to add or subtract.



1805

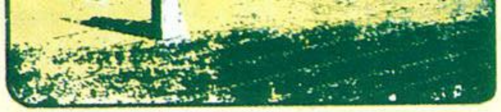
JACQUARD'S LOOM
Joseph Jacquard invented a loom with a moving belt of punched cards. Information on the cards told thread on a loom how to form colorful patterns in fabric.

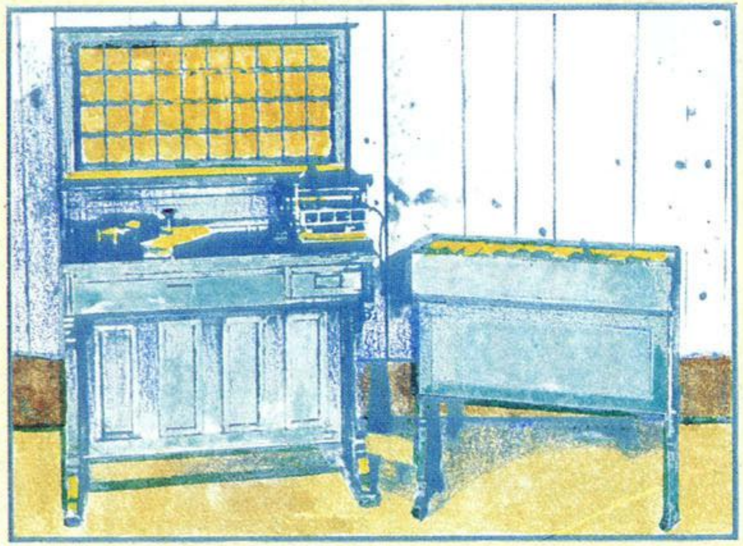


1850

ANALYTICAL ENGINE
Charles Babbage drew up plans for a steam-driven machine that would work like a computer. The technology of the time wasn't good enough to construct it though.

patterns in fabric.





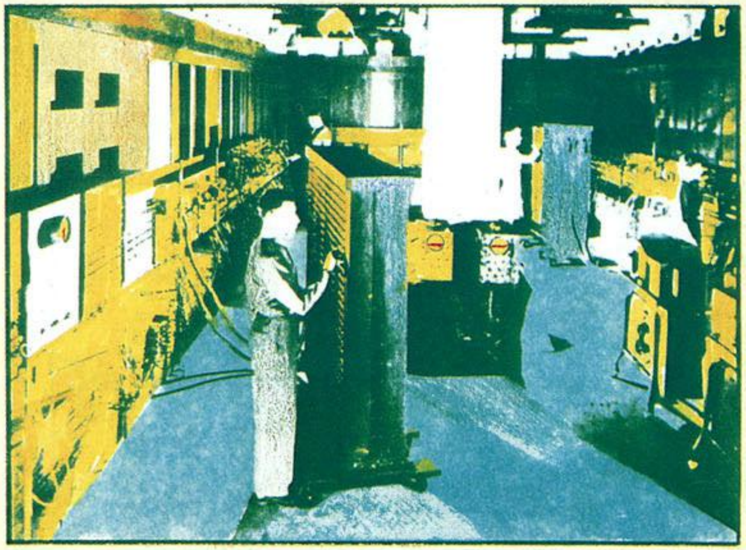
1890

CENSUS MACHINE
Herman Hollerith put U.S. census information on punched cards. His machine read the cards and added up the information electrically.

1960s

MINICOMPUTER
Gas-filled tubes were replaced by tiny transistors that formed tiny electrical circuits. The transistors were more powerful than the tubes. They could operate thousands of times faster than ENIAC.

good enough to construct it though.

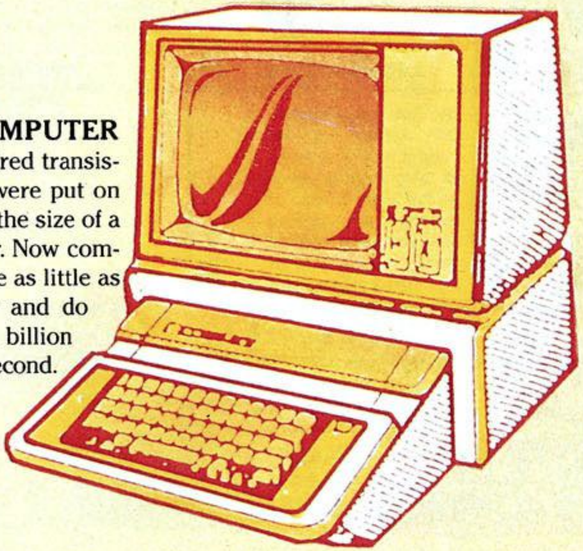


1946

ENIAC
John Mauchly and Presper Eckert invented the first totally electronic computer. It got its power from 18,000 gas-filled tubes and performed 5,000 additions per second. It was as big as a classroom.

1977

MICROCOMPUTER
Several hundred transistor circuits were put on a microchip the size of a pencil eraser. Now computers can be as little as a typewriter and do more than a billion additions a second.



SPOLLEN

MICRO IDEAS

Quick Computer Tips and Activities

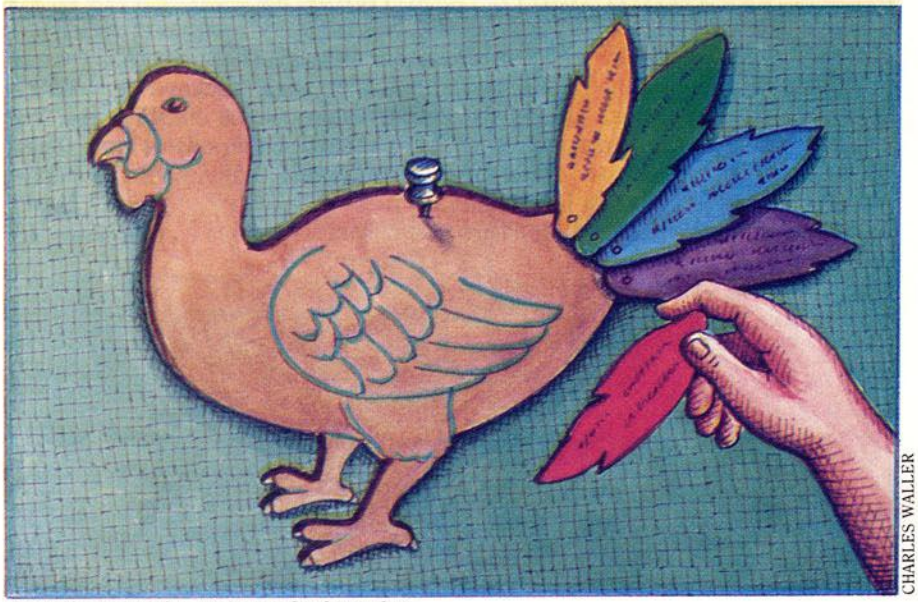
GOBBLE UP THOSE COMPUTER BOOKS

November 7 to 11 is National Children's Book Week. Why not encourage kids to read computer books that week?

On a bulletin board entitled "Books to Gobble About," tack a simple turkey shape made from brown construction paper. *(See illustration.)*

Each time a student reads a computer book, give him or her a bright colored paper feather. Tell kids to write their name, and the name of the book and its author on the feather. Let them attach the feather to the turkey on the bulletin board. You'll have one gorgeous gobbler by the end of the week!

Doug Hanson
Oneida, NY



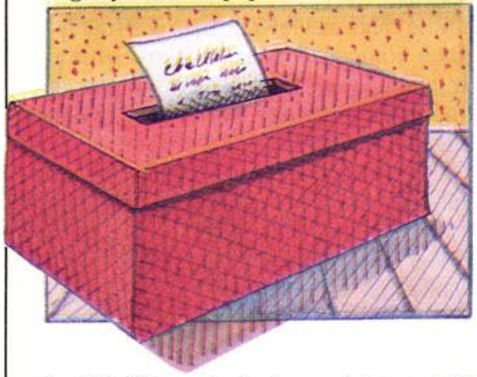
CHARLES WALLER

Bulletin board for computer book readers.

SET UP A HELP PORT

A good way to handle problems that arise while children are working independently in your computer center is to set up a Help Port (question box).

To make one, cover a shoe box with brightly colored paper and cut a slot in the lid. When students run into a problem or have a question while you're busy, they can print out the "problem program" or write down their question.



Ports on a computer are places to access peripherals (additional computer equipment that allows the computer to perform a greater variety of functions). The Help Port allows kids to access outside help, too—from you!

Check the Help Port every day. Besides helping kids with individual problems, the Help Port will give you input on general problem areas.

Sandra Markle
Dunwoody, GA

WRAP GIFTS IN CUSTOMIZED PRINTOUT PAPER

Computer printout paper can make great wrapping paper—especially when it has seasonal graphics on it!

Using the Basic PRINT statements below, kids can create a Christmas tree on the computer screen.

```
10 PRINT        “ * ”
20 PRINT      “ *   * ”
30 PRINT    “ *       * ”
40 PRINT  “ *   *   *   * ”
50 PRINT “        X        ”
```

After the program is typed into the computer, have kids type in RUN and press ENTER or RETURN. They'll have a delightful Christmas tree!

Have students printout their tree and wrap their present so that the tree appears on the top center of the gift.

Extension: Students also will enjoy using PRINT statements to design their own Santas, menorahs, or other holiday symbols.

Donna Dewy
St. Louis, MO

WRITE GIFT LISTS IN *BASIC*

Hanukkah and Christmas aren't far away. This is the time all kids write out a list of gifts they would like to receive. Have kids use the computer program below to write their list.

Students should type in line 10 as is, but when they come to the lines 20-40, they should replace the gifts that are in quotes with ones they would like. If they would like to list more than three gifts, they can continue writing line statements like lines 20-40.

```
10 PRINT “Gift List”
20 PRINT “Bike”
30 PRINT “Dog”
40 PRINT “Computer”
```

Once they've typed their program, tell kids to type in RUN, press ENTER or RETURN, and they'll have a computerized list of the presents.

Extension: You might even consider having kids write an entire book of lists for November and December holidays. Lists could include what students are thankful for, Hanukkah and Christmas gifts they plan to buy for friends, favorite seasonal songs, and so on.

Peg Lawson
Seattle, WA

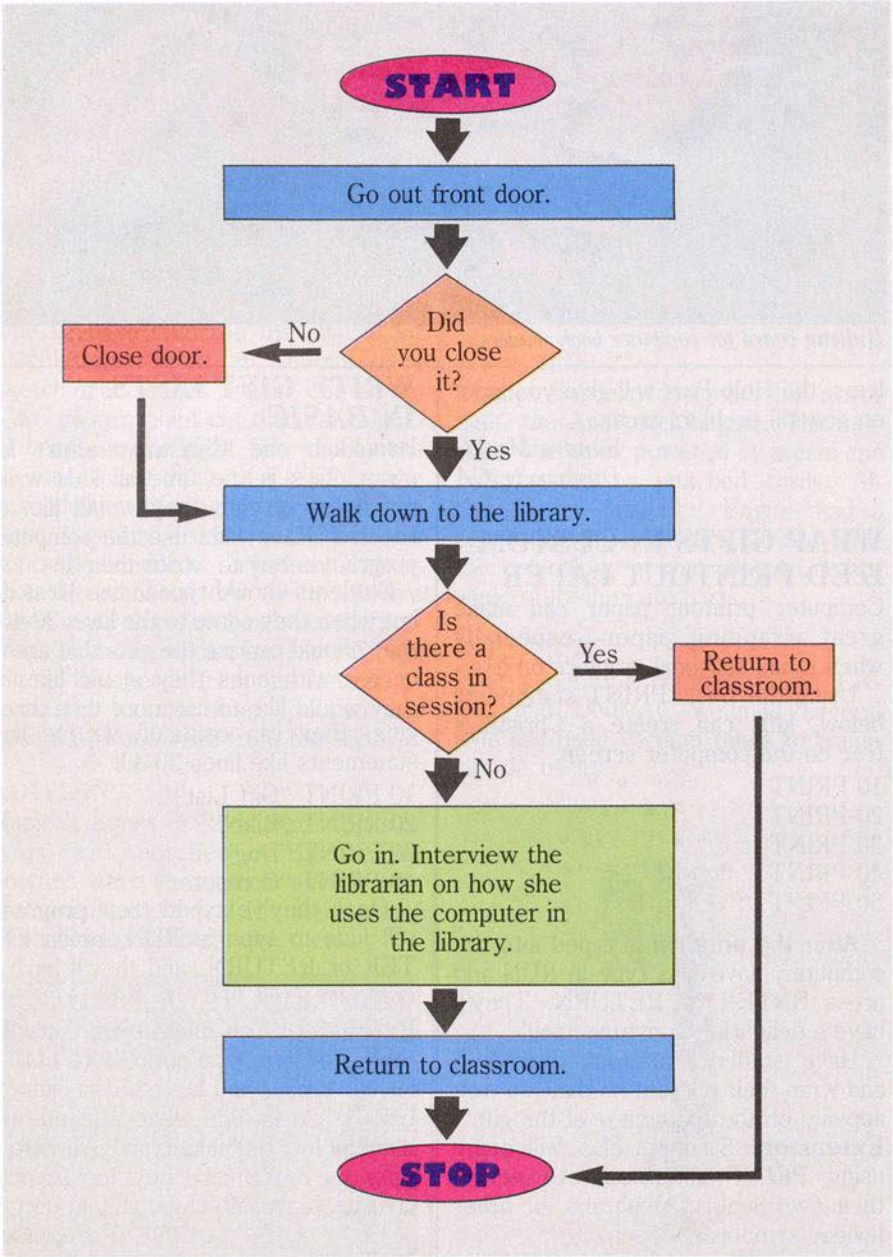
(Continued)

(Continued from page 45)

MAKE A FLOWCHART OF A SCHOOL WALK

To give students practice with flowcharts, I have them chart walks from one point in school to another. I start by assigning simple walks around the classroom and proceed to more complicated walks around the school or playground. In the flowchart illustrated on this page, I asked students to chart a walk from our room to the library, to ask the librarian how she uses computers, and then back. (Some of the charts were simple ones like the flowchart below. Others were very sophisticated ones.)

Ellen Rasys
Colchester, VT


START
Go out front door.
Did you close it?
No
Close door.
Yes
Walk down to the library.
Is there a class in session?
Yes
Return to classroom.
No
Go in. Interview the librarian on how she uses the computer in the library.
Return to classroom.
STOP

DONNA MOLL

Sample flowchart of school walk.

QUICK TIPS

- If you move your computer between different TVs, you'll find that a small sewing-machine screwdriver is just the right size for attaching the TV switch box to different sets.
- Eliminate numerous cord tangles and extensions by buying a four-outlet power strip to plug your peripherals into.
- Keep a cardboard box in your computer center to hold computer books, magazines, and catalogs for students to browse through while they are waiting for their turn on the computer.

Marcus Jacobson
Bronx, NY

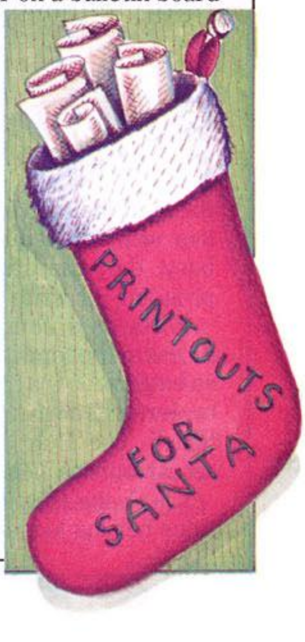
WRITE LETTERS FROM SANTA

Last December I cut out the words "Printouts for Santa" from felt material, glued them onto a Christmas stocking, and hung the stocking in my computer corner. I told kids the stocking was their direct line to Santa. They were to put any printouts they were particularly proud of in the stocking and I would see that Santa got them.

Each week, I took the stocking home and reviewed the printouts. I then composed a letter from Santa on my computer. Each letter summarized the good computer work kids had done in the printouts.

I hung each letter on a bulletin board in the computer corner. The kids loved seeing their names in a letter from Santa. There were other benefits, too. The letters motivated the kids to do more computer work—and reading what others had done gave students new ideas to try.

Maxine Brown
Pine Bluff, AR

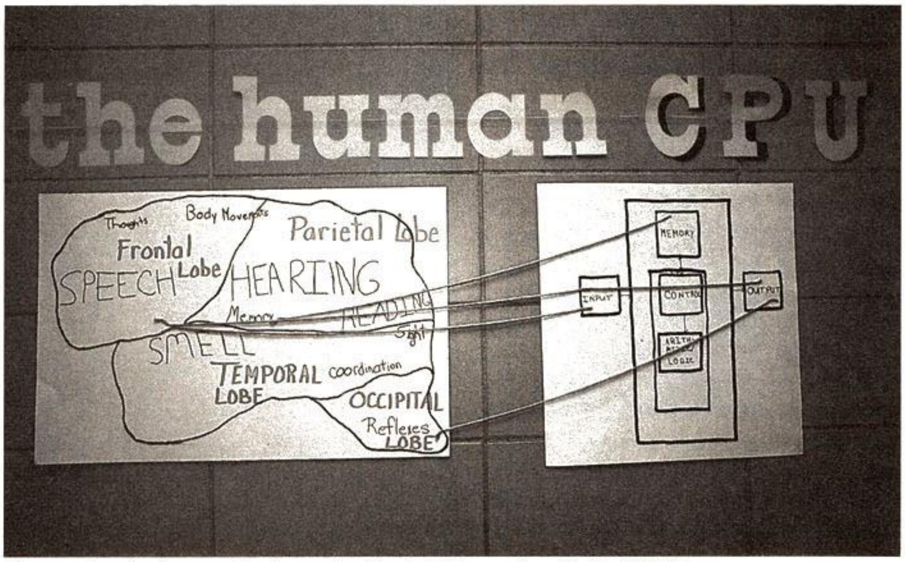

PRINTOUTS FOR SANTA

COMPARE THE HUMAN BRAIN WITH THE CPU

The human brain works very much like the CPU (Central Processing Unit) in a microcomputer. That's what students at Evans School in Yeadon, Pennsylvania, discovered when they studied the brain.

To display their newly found knowledge, children constructed a bulletin board entitled "The Human CPU." On one posterboard kids drew the parts of the brain; on another, the parts of the CPU. Kids hung the posters side-by-side, then taped pieces of yarn from each part of the brain to its corresponding part on the CPU. (See the photo.)

Shiela Swett
Purdys, NY



Comparing the human brain to the Central Processing Unit. (CPU)

SWAP TEACHING UNITS

Each of the eight fifth-grade teachers in our school developed a different teaching unit on a specific computer topic. The units contain task cards, posters, worksheets, and a teacher's guide. One unit is on computer careers, another on computer history, another on simple programming, another on word processing, and so on.

We placed one teaching unit in each class's computer corner for kids to work on in their spare time. Every four weeks, we plan to rotate the units so classes will have a new topic to study each month!

By putting our heads together, each teacher got eight teaching units for the price of one!

Dot Dorchester
Jacksonville, FL

ASK FOR A HELPING HAND

Whenever I think of something a student can do to help keep our computer corner neat and clean, like filing disks and activity cards, decorating the computer bulletin board, or posting computer rules, I list the job on the chalkboard under a Help Wanted sign. When students have free time during the day, they check the board, then ask me about volunteering for one of the tasks. When they have completed a task, they erase it from the board—giving me room to add new jobs!

Judi Lewis
Portland, ME

(Continued)

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MICRO IDEAS

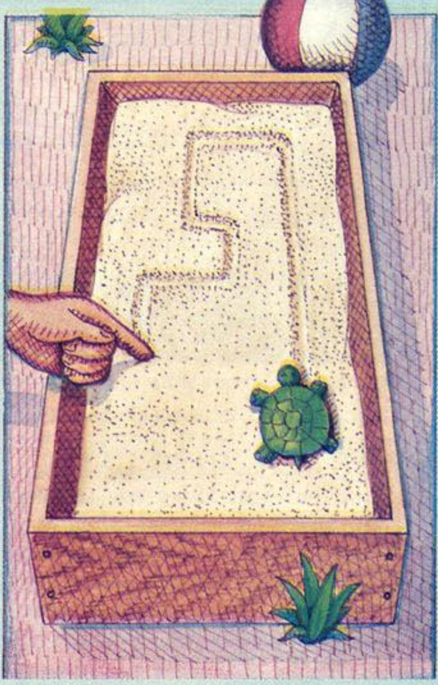
(Continued from page 47)

PUT "TURTLE" IN THE SAND

Before you teach children Logo, they must be able to understand the concepts of forward, backward, right, and left.

To help students understand these concepts, I have them draw simple designs in a small sandbox. Then I give them a plastic toy turtle and ask them to trace the patterns with the turtle, calling out the directions they take as they go: "Left, right, backward, forward. . . ."

Jan Cardell
Charlottesville, VA



Students can practice Logo movements by moving a toy turtle in the sand.

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Do you have computer activities, bulletin boards, or management tips you'd like to share? Send them to Micro Ideas, *Teaching and Computers*, 730 Broadway, New York, NY 10003. We'll pay $15 to $30 for each idea we publish, and $5 for each quick, one-line tip we use. ■

LOGO NOTEBOOK

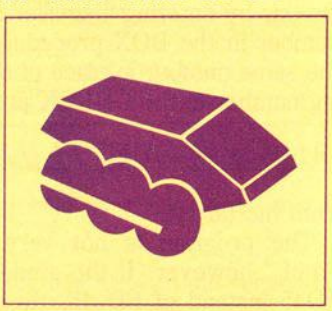
Lesson Three: MORE TURTLE CONTROL

BY TOM LOUGH
AND STEVE TIPPS

In the last two lessons, Logo Notebook presented activities that introduced students to the four basic Logo commands—FORWARD, BACK, RIGHT, LEFT.

Lesson three is designed to fine-tune their ability to control turtle movement, direction, and distance using these same simple commands. The first two activities are off-line (off the computer) activities. The last two exercises are variations of the first two, done on the computer.

1. HIT THE SPOT



Objective: Students program Big Trak to move to an exact location inside a square.

Activity: Milton Bradley's Big Trak programmable truck is great for playing "Hit the Spot," a game in which students program Big Trak to stop inside a square on the floor. (If you don't have a Big Trak, blindfolded students will do; see extension activity below.)

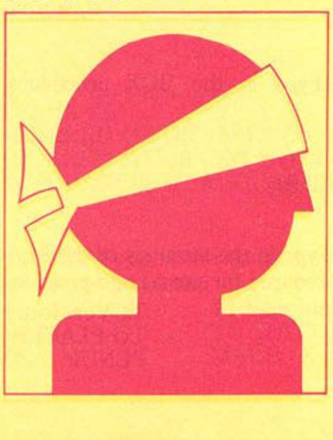
Using masking tape, outline an 18-inch square on the floor. Place Big Trak on the floor a few feet away and turn it so that it is not pointing toward the square.

Have students write down what single turn and what single distance command they think will make the Big Trak stop inside the square.

The first student enters his or her two commands into the Big Trak and off it goes . . . where it will stop, nobody knows. As the second, third, and fourth students enter their programs, kids will soon learn what numbers are necessary to do the job!

Extension: (1) You can use a blindfolded student in place of Big Trak. Position him or her on a starting point a few feet from the square. Turn the human turtle around a few times to disorient him or her. Ask the other students to figure out what turn command (left or right and its degrees) and distance command (forward or back and its degrees) would move the human turtle to the square. Have students call out their commands, one at a time, for the blindfolded child to follow. (2) "Big Trak Golf" is a fun variation. Students must negotiate Big Trak or a human turtle through a course made of 18 masking-tape squares (holes) on a "par" basis.

2. WARMER OR COOLER

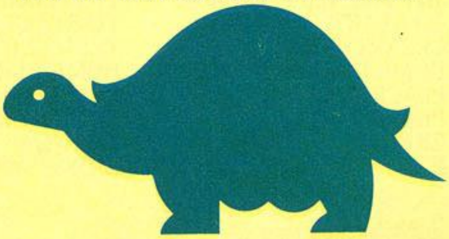


Objective: A team of students try to locate a secret spot based on feedback from other students.

Activity: Pick a team of two or more students to be searchers. The searchers leave the room while the rest of the class selects a point on the floor to serve as the secret target. When the searchers return, they blindfold one of their members.

The unblindfolded searchers give turtle commands to their blindfolded member for him or her to follow. After each command, the class responds with "warmer" or "cooler," depending on whether the blindfolded turtle has moved closer or further from the secret spot.

When the searchers discover the secret spot, send out a new team of students to be searchers and start the game over. Keep a record of how many commands each team used to find the spot. The winner is the team with the least amount of commands.



REA ACKERMAN

Lesson Three:
MORE TURTLE CONTROL

3. LOGO HIT-THE-SPOT

The first program listing on the next page provides you with a Logo activity for primary students that's based on the "Hit-the-Spot" game described in section one. Type in the listing exactly as shown. Be sure to follow the correct version for your Logo program.

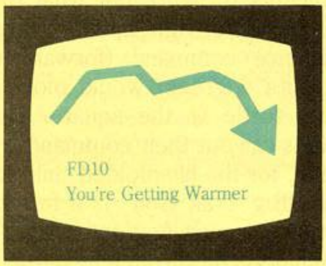
The program places a box and the turtle at random on the screen. Students use single keystroke commands to move the turtle inside the box. To begin the game, the students type in START and press RETURN or ENTER.

START is the master procedure. After clearing the screen, START calls upon the PLACEBOX procedure to draw a box somewhere and record the coordinates (X and Y) of the box's lower left corner in the computer's memory. PLACETURTLE then positions the turtle at a random location with a random heading.

CRAWL contains instructions to change regular Logo commands into single keystroke commands (a procedure called INSTANT). The procedure also contains a CHECK to see if the turtle is in the box. If it is, the computer prints, " You win!" on the bottom of the screen.

Extension: To make the game more challenging, reduce the size of the box. Do this by entering a smaller FD input number in the BOX procedure. Enter the same number in place of the existing number in the CHECK procedure.

4. LOGO WARMER OR COOLER



The second listing on page 61 is based on the "Warmer or Cooler" activity described in activity two. START2, the main procedure, uses SETPOINT to select a secret spot and PLACETURTLE to give the turtle a random location and heading. DISTANCE calculates the distance between the turtle and the secret spot. HUNT accepts Logo turn and movement commands and continually checks to see if the turtle is coming closer to the secret spot.

The computer generates "Warmer" and "Cooler" messages depending on whether the turtle is closer or farther from the target.

The program is not very "bulletproof," however. If the student types FD45 instead of FD 45, the program stops and generates an error message. To resume the activity after an error message, students must type in HUNT.

As students play "Warmer or Cooler," watch for inward spiral patterns as the turtle closes in on its target spot!

Extension: Place the secret spot in a maze or city map transparency taped to the screen so that the turtle is confined to streets or paths.

PROGRAM LISTING FOR HIT-THE-SPOT

Follow the steps for typing in the procedures for "Hit-the-Spot."

1. **DIRECTIONS:** Type in the version of the START procedure for your Logo program.

MIT and Apple Version:

```
TO START
CLEARTEXT
HOME CLEARSCREEN
PLACEBOX
PLACETURTLE
CRAWL
END
```

TI Version:

```
TO START
TELL TURTLE
HOME CLEARSCREEN
PLACEBOX
PLACETURTLE
CRAWL
END
```

2. **DIRECTIONS:** Type in the BOX procedure exactly as shown.

All Versions:

```
TO BOX
REPEAT 4 [FD 25 RT 90]
END
```

3. **DIRECTIONS:** Type in the versions of the PLACEBOX and PLACETURTLE procedures for your Logo program.

MIT Version:

```
TO PLACEBOX
RANDOMIZE
```

TI Version:

```
TO PLACEBOX
PENUP
```

```
PENUP SETX (110 - RANDOM 240)
SETY (90 - RANDOM 160)
PENDOWN
SETHEADING 0
BOX
PENUP
MAKE "X XCOR
MAKE "Y YCOR
HOME PENDOWN
END
```

```
SX (90 - 20 * RANDOM)
SY (45 - 10 * RANDOM)
PENDOWN
SETHEADING 0
BOX
PENUP
MAKE "X XCOR
MAKE "Y YCOR
HOME
PENDOWN
END
```

Apple Version:
Omit the word RANDOMIZE from the MIT PLACEBOX version.

MIT Version:

```
TO PLACETURTLE
PENUP
RANDOMIZE
SETX (110 - RANDOM 240)
SETY (90 - RANDOM 160)
SETHEADING RANDOM 360
END
```

TI Version:

```
TO PLACETURTLE
PENUP
SX (90 - 20 * RANDOM)
SY (45 - 10 * RANDOM)
SETHEADING 40 * RANDOM
PENDOWN
END
```

Apple Version:
Omit the word RANDOMIZE from the MIT PLACETURTLE version.

4. DIRECTIONS: Type in the versions of the CRAWL and CHECK procedures for your Logo program.

MIT and TI Version:

```
TO CRAWL
MAKE "KEY RC
IF :KEY = "F FORWARD 10
IF :KEY = "B BACK 10
IF :KEY = "L LEFT 15
IF :KEY = "R RIGHT 15
MAKE "IN.BOX CHECK
IF :IN.BOX? = "TRUE PRINT [YOU WIN!] STOP
CRAWL
END
```

Apple Version:

```
TO CRAWL
MAKE "KEY RC
IF :KEY = "F [FORWARD 10]
IF :KEY = "B [BACK 10]
IF :KEY = "L [LEFT 15]
IF :KEY = "R [RIGHT 15]
MAKE "IN.BOX CHECK
IF :IN.BOX? = "TRUE [PRINT [YOU WIN!] STOP]
CRAWL
END
```

MIT and TI Version:

```
TO CHECK
IF (XCOR >  :X + 25) OUTPUT "FALSE
IF (XCOR <  :X) OUTPUT "FALSE
IF (YCOR >  :Y + 25) OUTPUT "FALSE
IF (YCOR <  :Y) OUTPUT "FALSE
OUTPUT "TRUE
END
```

Apple Version:

```
TO CHECK
IF (XCOR >  :X + 25) [OUTPUT "FALSE]
IF (XCOR <  :X) [OUTPUT "FALSE]
IF (YCOR >  :Y + 25) [OUTPUT "FALSE]
IF (YCOR <  :Y) [OUTPUT "FALSE]
OUTPUT "TRUE
END
```

☐

PROGRAM LISTING FOR WARMER OR COOLER

Follow the steps for typing in the procedures for "Warmer or Cooler."

1. DIRECTIONS: Type in the version of the START2 procedure for your Logo program.

MIT and Apple Version:

```
TO START2
CLEARTEXT
HOME CLEARSCREEN
SETPOINT
PLACETURTLE
MAKE "D DISTANCE :X :Y
HUNT
END
```

TI Version:

```
TO START2
TELL TURTLE
HOME CLEARSCREEN
SETPOINT
PLACETURTLE
MAKE "D DISTANCE :X :Y
HUNT
END
```

2. DIRECTIONS: Type in the version of the DISTANCE procedure for your Logo program.

MIT and Apple Version:

```
TO DISTANCE :X :Y
MAKE "X.SQUARED (XCOR - :X) * (XCOR - :X)
MAKE "Y.SQUARED (YCOR - :Y) * (YCOR - :Y)
MAKE "HOWFAR SQRT (:X.SQUARED + :Y.SQUARED)
OUTPUT :HOWFAR
END
```

TI Version:

```
TO DISTANCE :X :Y
MAKE "X.SQUARED (XCOR - :X) * (XCOR - :X)
MAKE "Y.SQUARED (YCOR - :Y) * (YCOR - :Y)
OUTPUT (:X.SQUARED + :Y.SQUARED)
END
```

3. DIRECTIONS: Type in the version of the SETPOINT procedure for your Logo program.

MIT Version:

```
TO SETPOINT
RANDOMIZE
MAKE "X (110 - RANDOM 240)
MAKE "Y (90 - RANDOM 160)
END
```

TI Version:

```
TO SETPOINT
MAKE "X (90 - 20 * RANDOM)
MAKE "Y (45 - 10 * RANDOM)
END
```

Apple Version:
Omit the word RANDOMIZE from the MIT version.

4. DIRECTIONS: Type in the version of the HUNT procedure for your Logo program.

MIT and TI Versions:

```
TO HUNT
RUN REQUEST
MAKE "D1 DISTANCE :X :Y
IF :D1 <  10 PRINT [YOU GOT IT!] STOP
IF :D - :D1 = 0 PRINT [NO TEMPERATURE CHANGE]
IF :D - :D1 <  0 PRINT [YOU'RE GETTING COOLER!]
IF :D - :D1 >  0 PRINT [YOU'RE GETTING WARMER!]
PRINT []
MAKE "D :D1
HUNT
END
```

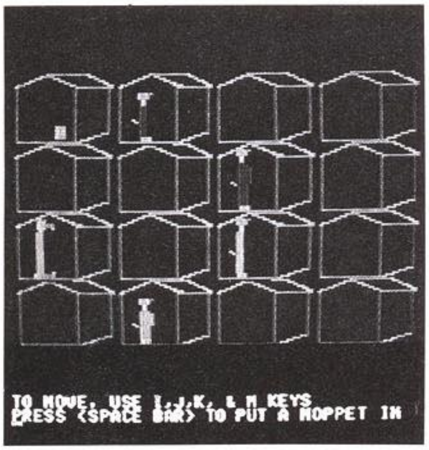
Apple Version:

```
TO HUNT
RUN READLIST
MAKE "D1 DISTANCE :X :Y
IF :D1 <  10 [PRINT [YOU GOT IT!] STOP]
IF :D - :D1 = 0 [PRINT [NO TEMPERATURE CHANGE]]
IF :D - :D1 <  0 [PRINT [YOU'RE GETTING COOLER!]]
IF :D - :D1 >  0 [PRINT [YOU'RE GETTING WARMER!]]
PRINT []
MAKE "D :D1
HUNT
END
```

5. DIRECTIONS: Type in the PLACETURTLE procedure from the Logo "Hit-the-Spot" listing on this page. ☐

SOFTWARE SHOWCASE

Software Recommended For Teachers By Teachers



```
TO MOVE, USE I,J,K, & M KEYS
PRESS <SPACE BAR> TO PUT A MOPPET IN
```

Assigning Moppets Hotel Rooms.

MOPTOWN PARADE and MOPTOWN HOTEL

Computer: *Radio Shack Color Computer; Apple*
Topic: *Thinking Skills*
Level: *Parade: Grades K-2, Hotel: Grades 3-6*

Moptown residents are big-nosed characters called Bibbits or crooked-tailed characters called Gribbits. They are Fat or Thin, Tall or Short, and Red or Blue. Students are asked to distinguish differences, to notice similarities, and to sequence Moppets in various activities. *Moptown Parade* contains seven activities that challenge kids to make a Moppet twin, set up a Moptown parade, and guess who can join the Moptown clubhouse. *Moptown Hotel* contains seven more advanced activities like "Moptown Hotel," where players must deduce a pattern to assign moppets to hotel rooms.

Students work at their own pace. If they answer a problem incorrectly, the program provides a minitutorial.

The program's only fault is that the screen directions are crowded and hard to read. Otherwise, it is very friendly and students thoroughly enjoy their encounters with the Moppets. The program works well with a small group gathered around the monitor or with students working in partners. The fact that it fits into several curriculum areas like science, language arts, and math make *Moptown Parade* and *Moptown Hotel* valuable pieces of software.

Type of Software: Disk
Price: $39.95 each
Policy: $10 replacement fee; preview through dealers
Source: The Learning Company, 545 Middlefield Rd., Menlo Park, CA 94025; 415/328-5410.

Evelyn Woldman
Computer Coordinator
Holliston Public Schools
Holliston, MA

Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

BASIC NUMBER FACTS

Computer: *TI 99/4A; Atari 800; Apple*
Topic: *Math*
Level: *Grades 2-6*

Students choose a car for themselves and their opponent from a fancy racer to a jeep at the start of *Basic Number Facts.* They take a practice run and then the race is on! Students use basic operations to solve problems faster than their opponent. After the race, the computer gives a summary of races run and won in text and graphic form.

Although the program is designed for second and third graders, the race car format makes an excellent motivational tool for older students who need practice in basic operations. The teacher's manual offers activities for integrating the program into the curriculum, reproducible worksheets, and suggestions for use with individuals, and small or large groups.

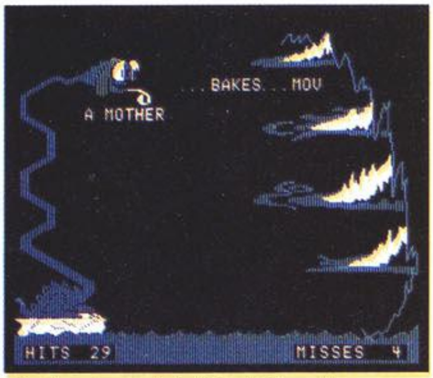
Type of Software: Disk
Price: $60
Policy: Back-up included; preview through dealers
Source: Control Data Publishing Corporation, Inc., P.O. Box 261127, San Diego, CA 92126; 800/233-3784.

Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

ARCADEMIC SKILL BUILDERS IN LANGUAGE ARTS

Computer: *Apple*
Topic: *Language Arts*
Level: *Grades 2-6*

When the verb in the correct tense reaches the dragon's mouth, the student must press the "hit" key. That is how to play "Verb Viper," one of the six programs in the Arcademic Skill Builders package. The other games, "Word Man," "Word Invasion," "Spelling Wiz," "Word Radar," and "Word Master," provide drill and practice in other language arts areas.



Finding the verb in "Verb Viper."

The package includes an informative manual and 24 relevant reproducible pages. The manual provides instructions for monitoring student performances and altering the program. The option to control the level of difficulty by speed, content, or number of examples allows for individualization. The programs are appropriate for language arts classes and should be used as a supplement to reinforce specific skills.

Type of Software: Disk
Price: $44 each; $245 for package
Policy: $20 replacement fee; preview through dealers
Source: Developmental Learning Materials, One DLM Park, Allen, TX 75002; 800/527-4747.

Dawn Gilman Fischer
Learning Disabilities Teacher
Public School System
Alexandria, VA

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TEACHING and computers

November/December 1983
(Expires February 1)

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- ☐ c. Junior High
- ☐ d. Senior High
- ☐ e. Junior/Senior
- ☐ f. College
- ☐ g. District
- ☐ h. State
- ☐ i. Federal/National
- ☐ j. Other

II. Your primary job (check one)
- ☐ 1. Administrative (including Superintendent/Principal)
- ☐ 2. Teaching (including Department Head)
- ☐ 3. Evaluation/Purchasing
- ☐ 4. Curriculum Development
- ☐ 5. Media Specialist/Librarian
- ☐ 6. Other

III. What is your primary involvement with computers?
- ☐ a. Actively use computers
- ☐ b. Recommend type/brand
- ☐ c. Approve purchase
- ☐ d. General interest
- ☐ e. All of the above

IV. Your school or district's investment in electronic learning materials.
- ☐ 1. Increasing
- ☐ 2. Decreasing
- ☐ 3. No Change

V. In which area does your school or district use computers? (check one)
- ☐ a. Interdisciplinary (elementary classroom)
- ☐ b. Math
- ☐ c. Reading
- ☐ d. Science
- ☐ e. Business/Vocational Education
- ☐ f. Computer Sciences
- ☐ g. Social Sciences
- ☐ h. English/Language Arts
- ☐ i. Other

VI. How does your school or district use computers?
- ☐ 1. Primarily for administrative purposes
- ☐ 2. Primarily for instructional purposes

VII. What type of software has your school/district purchased in the past year?
- ☐ a. Curriculum-based courseware
- ☐ b. Fun/Learning software
- ☐ c. Word Processing
- ☐ d. Utility
- ☐ e. Programming

VIII. Your school/district enrollment
- ☐ 1. Under 300
- ☐ 2. 300–499
- ☐ 3. 500–999
- ☐ 4. 1000–4999
- ☐ 5. 5000–9999
- ☐ 6. 10,000–24,000
- ☐ 7. 25,000 +

1	2	3	4	5	6	7	8	9	10
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TEACHING and computers

November/December 1983
(Expires February 1)

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- ☐ g. District
- ☐ h. State
- ☐ i. Federal/National
- ☐ j. Other

II. Your primary job (check one)
- ☐ 1. Administrative (including Superintendent/Principal)
- ☐ 2. Teaching (including Department Head)
- ☐ 3. Evaluation/Purchasing
- ☐ 4. Curriculum Development
- ☐ 5. Media Specialist/Librarian
- ☐ 6. Other

III. What is your primary involvement with computers?
- ☐ a. Actively use computers
- ☐ b. Recommend type/brand
- ☐ c. Approve purchase
- ☐ d. General interest
- ☐ e. All of the above

IV. Your school or district's investment in electronic learning materials.
- ☐ 1. Increasing
- ☐ 2. Decreasing
- ☐ 3. No Change

V. In which area does your school or district use computers? (check one)
- ☐ a. Interdisciplinary (elementary classroom)
- ☐ b. Math
- ☐ c. Reading
- ☐ d. Science
- ☐ e. Business/Vocational Education
- ☐ f. Computer Sciences
- ☐ g. Social Sciences
- ☐ h. English/Language Arts
- ☐ i. Other

VI. How does your school or district use computers?
- ☐ 1. Primarily for administrative purposes
- ☐ 2. Primarily for instructional purposes

VII. What type of software has your school/district purchased in the past year?
- ☐ a. Curriculum-based courseware
- ☐ b. Fun/Learning software
- ☐ c. Word Processing
- ☐ d. Utility
- ☐ e. Programming

VIII. Your school/district enrollment
- ☐ 1. Under 300
- ☐ 2. 300–499
- ☐ 3. 500–999
- ☐ 4. 1000–4999
- ☐ 5. 5000–9999
- ☐ 6. 10,000–24,000
- ☐ 7. 25,000 +

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

Name

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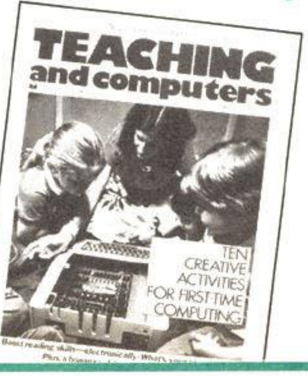

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MEMORY BUILDER

Computer: *Atari 400, 800; Apple*
Topic: *Memory Skills*
Level: *Grades K-3*

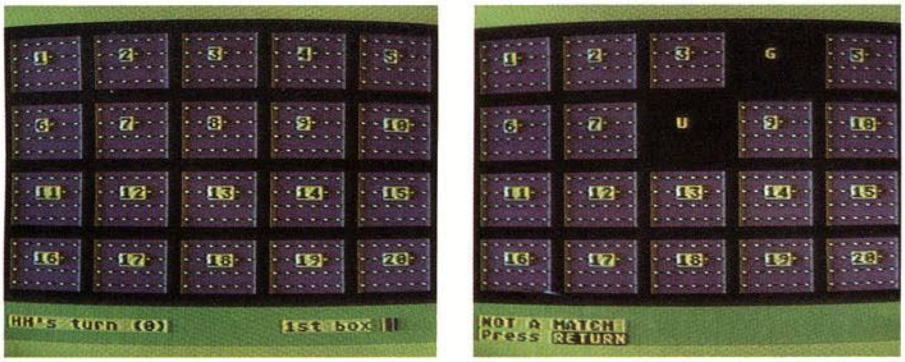
Memory Builder is formatted after the popular concentration format game. It is designed to build memory skills.

The game screen is composed of 20 numbered boxes. Players match boxes that contain the same letters. Students control the level of difficulty. Levels one and two present single letters. Level three is three-letter words. And level four is four-letter words. Students make matches by pressing the number that corresponds to the box they would like to open.

This program is useful for teaching numbers to kindergarten students and for motivating remedial reading students to learn the alphabet. We use this program with partners and urge vocalization of the items as they are matched to reinforce letter and word recognition.

Type of Software: Disk and cassette
Price: $16.95 cassette; $23.95 disk
Policy: $5 replacement fee; preview through dealers
Source: Program Design, Inc., 95 East Putnam Ave., Greenwich, CT 06830; 203/661-8799.

David Fiday
Media Director
Laraway District 70-C
Joliet, IL



NOT A MATCH
Press RETURN

Matching letters with Memory Builder.

CAREER SKILLS

Computer: *PET*
Topic: *Career Skills*
Level: *Grades 4-6*

As a plumber, which skills would be more important?

1. Using tools
2. Planning ahead

This is a sample question from *Career Skills.* After students answer similar questions for five careers, the five skills needed for those occupations appear on the screen. Students choose the skill that they would most enjoy in a career. Then the computer lists occupations in which that skill is important. For example, preparing reports is important for school teachers, accountants, social workers, and engineers.

The program matches 80 career titles with 36 related skills. Students learn which careers are suited to their individual interests and talents. After my students run the program, I ask them to research the careers that interest them the most. Sometimes I have each student find the skills important for two careers not included in the program.

Type of Software: Disk and cassette
Price: $9.95
Policy: Back-up; 30-day preview
Source: Robbinsdale Area Schools, 4148 Winnetka Ave. North, Minneapolis, MN 55427; 612/533-2781. (Also produced by Sunburst Communications, 34 Washington Ave., Pleasantville, NY 10570; 914/769-5030.)

Martha Kelly
Computer Specialist
Boston, MA

(Continued)

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SOFTWARE SHOWCASE

(Continued from page 53)

COOPERATION MAZE

Computer: *Apple*
Topic: *Directional Movement*
Level: *Preschool-Grade 3*

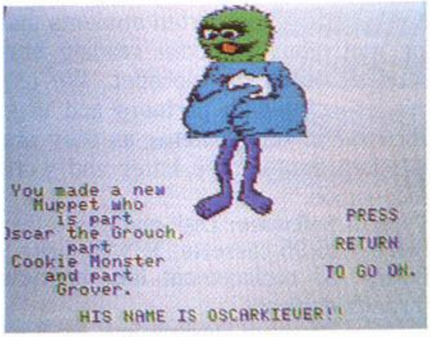
In *Cooperation Maze,* two students use paddles to move a cursor through a maze. One student controls the up and down movement and the other student controls the left and right movement. They work together to reach a flag.

While this may sound simple, it is an excellent way to help children having difficulty with their directions. The game helps students develop communication and coordination skills.

The teacher's guide tells what to do if a student becomes frustrated, how to escape from the program, and how much time students should spend on each exercise. The maze becomes more difficult each time the students repeat the game.

Type of Software: Disk
Price: $20
Policy: $5 back-up
Source: Edutek Corporation, 415 Cambridge #14, P.O. Box 11354, Palo Alto, CA 94306; 415/325-9965.

David Fiday
Media Director
Laraway District 70-C
Joliet, IL



```
You made a new
  Muppet who
   is part
Oscar the Grouch,
     part
Cookie Monster
   and part
    Grover.
```

```
PRESS
RETURN
TO GO ON.
```

```
HIS NAME IS OSCARKIEVER!!
```

"Oscar Kiever," a mixed-up muppet from "Mix and Match."

MIX AND MATCH

Computer: *Apple*
Topic: *Matching and Word Skills*
Level: *Preschool-Grade 6*

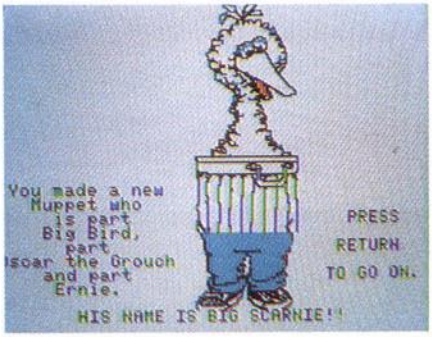
Imagine a muppet who is part Big Bird, part Oscar the Grouch, and part Ernie. His name is Big Scarnie. And he is only one of the muppets children can create using "Mix and Match," one of the games on the disk.

The package includes four games and a word editor. In "Animal," the computer tries to guess the animal a child is thinking about by asking questions like "Does it fly?" and "Does it live on land?" "Raise The Flags" is a letter and word guessing game similar to hangman. And "Layer Cake " is a game of logic.

The games are fun and interesting for children of all ages. The documentation contains explicit directions for playing the games and wonderful supplementary activities that don't require a computer.

Type of Software: Disk
Price: $50
Policy: Back-up included; preview through dealers
Source: Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.

Martha Kelly
Computer Specialist
Boston, MA



```
You made a new
  Muppet who
   is part
  Big Bird,
    part
Oscar the Grouch
  and part
   Ernie.
```

```
PRESS
RETURN
TO GO ON.
```

```
HIS NAME IS BIG SCARNIE!!
```

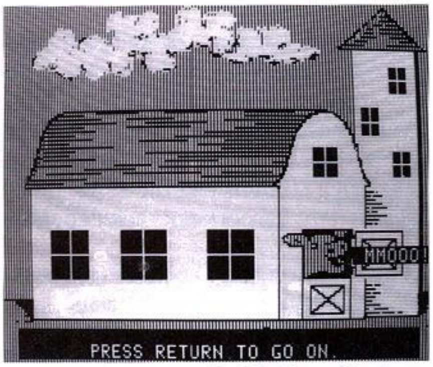
"Big Scarnie," another muppet creation.

BIG DOOR DEAL

Computer: *TRS-80 Models I, III; Apple*
Topic: *Language Arts*
Level: *Grades 3-6*

Big Door Deal is a takeoff on today's popular TV game shows. Players earn points toward grand prizes by using reading skills to open the correct doors. The package includes four disks: "Using Context Clues," "Recognizing Figurative Language," "Making Analogies," and "Sequencing Events."

In each game, the student only gets one chance to choose the door with the correct answer on it. For example, in Program #3, the player chooses between Robot, Man, and Vader, to complete the sentence "Charlie is to Brown as Darth is to. . . ." An incorrect answer wins a silly consolation prize, like a "soggy donut" or a "frozen fish." The grand prize for 10 out of 15 correct answers is a trip to an imaginary destination illustrated with computer graphics.



```
PRESS RETURN TO GO ON.
```

A trip to the country for Big Door Deal *winners.*

A "teacher feature" allows teachers to see a summary of the student's performance. The teacher's guide provides each set of words or phrases and the correct responses. It also contains reproducible record-keeping sheets. The subject areas and use of words is appropriate for today's students. To use these programs with your whole class, divide the students into teams and have them take turns doing problems.

Type of Software: Cassette (for TRS-80 Model 1) and disk for all.
Price: $29.95 each; $113.75 for package
Policy: $9 back-up
Source: Data Command, 329 E. Court St., Kankakee, IL 60901; 815/933-7735.

Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

YOUR VIC-20

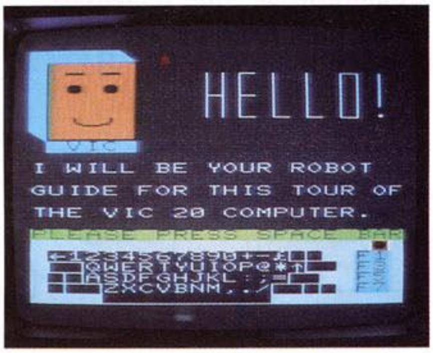
Computer: *Vic-20*
Topic: *Computer Literacy*
Level: *Grades 3-6*

Your Vic-20 takes the beginner on a tour of the computer. It teaches how the computer works and how to work with the computer. The sections include the inside of the computer, programming, graphics, and sound. There are four choices in each section. But it is not possible to see more than one choice per section without rewinding the program.

All the information you need is provided on the screen. A helpful instruction handbook contains a collection of computer activities that range from word games and secret codes to simple programming. The information about computers and programming is well presented, using excellent graphics. But the inaccessibility of certain parts of the program and the time spent waiting while the cassette loads each section are definite drawbacks.

Type of Software: Cassette
Price: $39.95
Policy: Back-up included; 30-day money-back guarantee
Source: Scholastic Wizware, 2931 East McCarty, Jefferson City, MO 65101; 800/325-6149.

Nancy Watson
Assistant Professor of Science
Ball State University
Muncie, IN



HELLO!

I WILL BE YOUR ROBOT GUIDE FOR THIS TOUR OF THE VIC 20 COMPUTER.

PLEASE PRESS SPACE BAR

The tour guide for Your Vic-20.

SIMPLE MACHINES

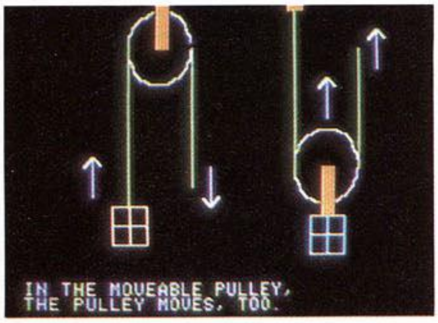
Computer: *Apple*
Topic: *Physical Science*
Level: *Grades 4-6*

Simple Machines is a delightful and useful tutorial that begins with a short history of machines. The program introduces children to the lever, pulley, wheel and axle, inclined plane, wedge, and screw. Each segment presents facts about the machine and real-life applications. Exercise #7 is a six-question summary quiz.

The program is simple to use. After students study the concept of simple machines in class, have partners work through the program together. Or use the program to introduce the topic and have students write reports on selected machines.

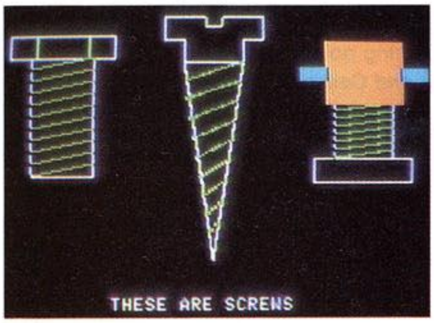
Type of Software: Disk
Price: $29.95
Policy: $15 back-up; 45-day preview
Source: Micro Power and Light Company, 12820 Hillcrest Rd., #224, Dallas, TX 75230; 214/385-7466.

David Fiday
Media Director
Laraway District 70-C
Joliet, IL



IN THE MOVEABLE PULLEY, THE PULLEY MOVES, TOO.

Demonstrating a moveable pulley.



THESE ARE SCREWS

A variety of screws from Simple Machines.

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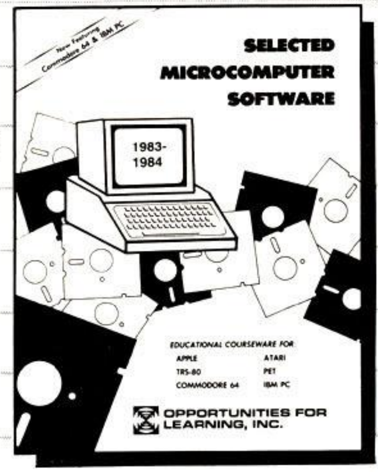
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(Highlighted in ***Teaching and Computers*** - Sept. 1983)

LA4 **U.S. MAP —** A huge map of the U.S. is used with all the states clearly outlined and labeled. The student may use the program 3 ways: to review the names of states, to test knowledge of the state names, and to attempt the "Tour Puzzle". (16K)

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TWO WORKSHEETS TO TEACH PRIMARY STUDENTS ABOUT SOFTWARE

The next two pages are worksheets that introduce primary children to computer software. Tear the worksheets out, run them off, and you have an instant lesson!

Tell students that a computer can't do anything by itself. It has to be told what to do and how to do it. It has to be given step-by-step instructions. Those instructions are called a *program.* Another word for a program is *software.* Software tells a computer how to do such things as perform math problems, print words, draw pictures, or play music.

In the first sheet, *Name the Software Device,* children are to label four devices that computer programs can be stored on. They are (as they appear on the worksheet): a punched card, a disk, a cassette tape, and a cartridge. Show kids actual samples if you have them.

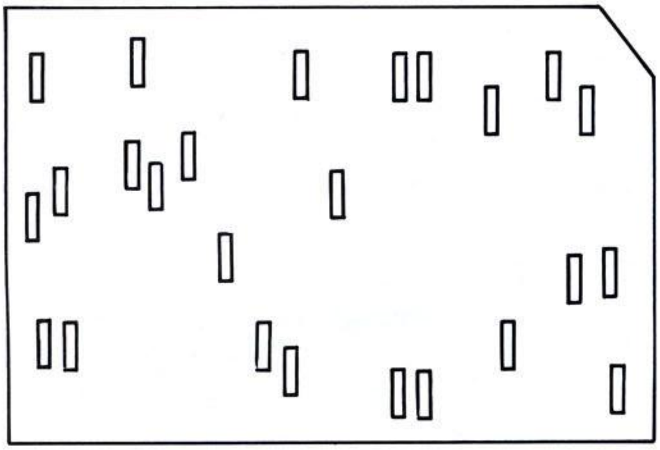
In the second worksheet, *What's Wrong?,* Santa and his elves are not handling disks and cassette tapes correctly. Point out to students that in the picture, none of the disks is in an envelope. A disk should always be stored in its protective envelope when not in use. Next, ask children to spot six specific misuses in the picture and mark each with an X. The misuses are: leaving disks near heat (radiator), placing heavy books on a disk, putting a disk near a magnet (magnets can erase stored info), playing toss with a disk, leaving a cassette tape on the floor, and inserting a tape into a disk drive instead of a cassette recorder. (Disk drives are for disks only.)

Students may wish to draw their own picture in which Santa and his elves use disks and cassette tapes correctly. ☐

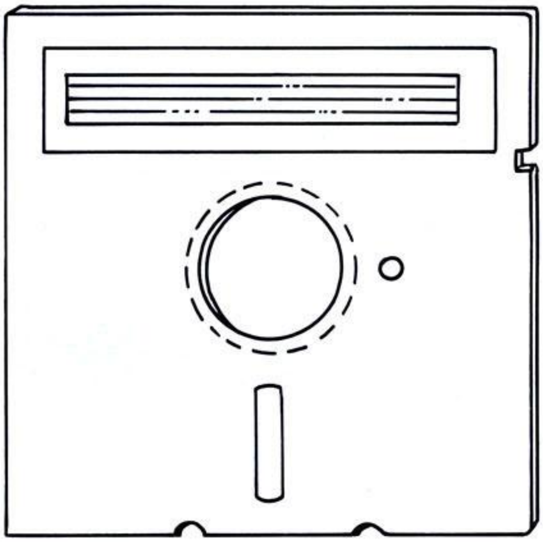
NAME________________________

Name the Software Device

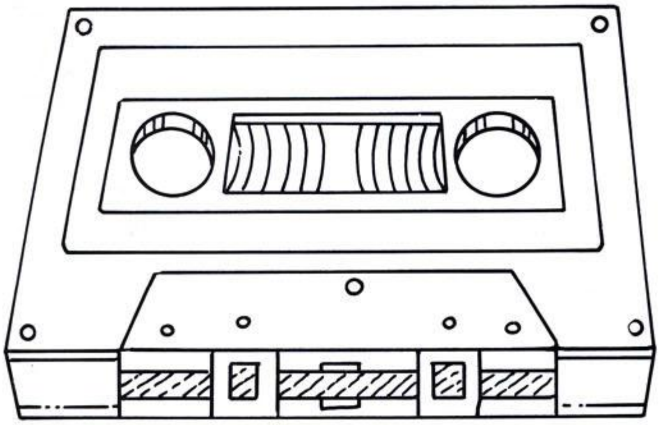
Software can be stored on different devices.
Label the software devices below.
Use these names: card, cartridge, tape, disk.
Color the picture.



1.________________________



2.________________________



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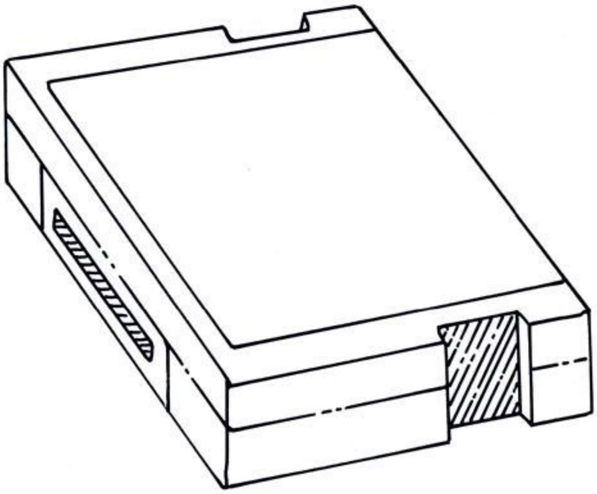

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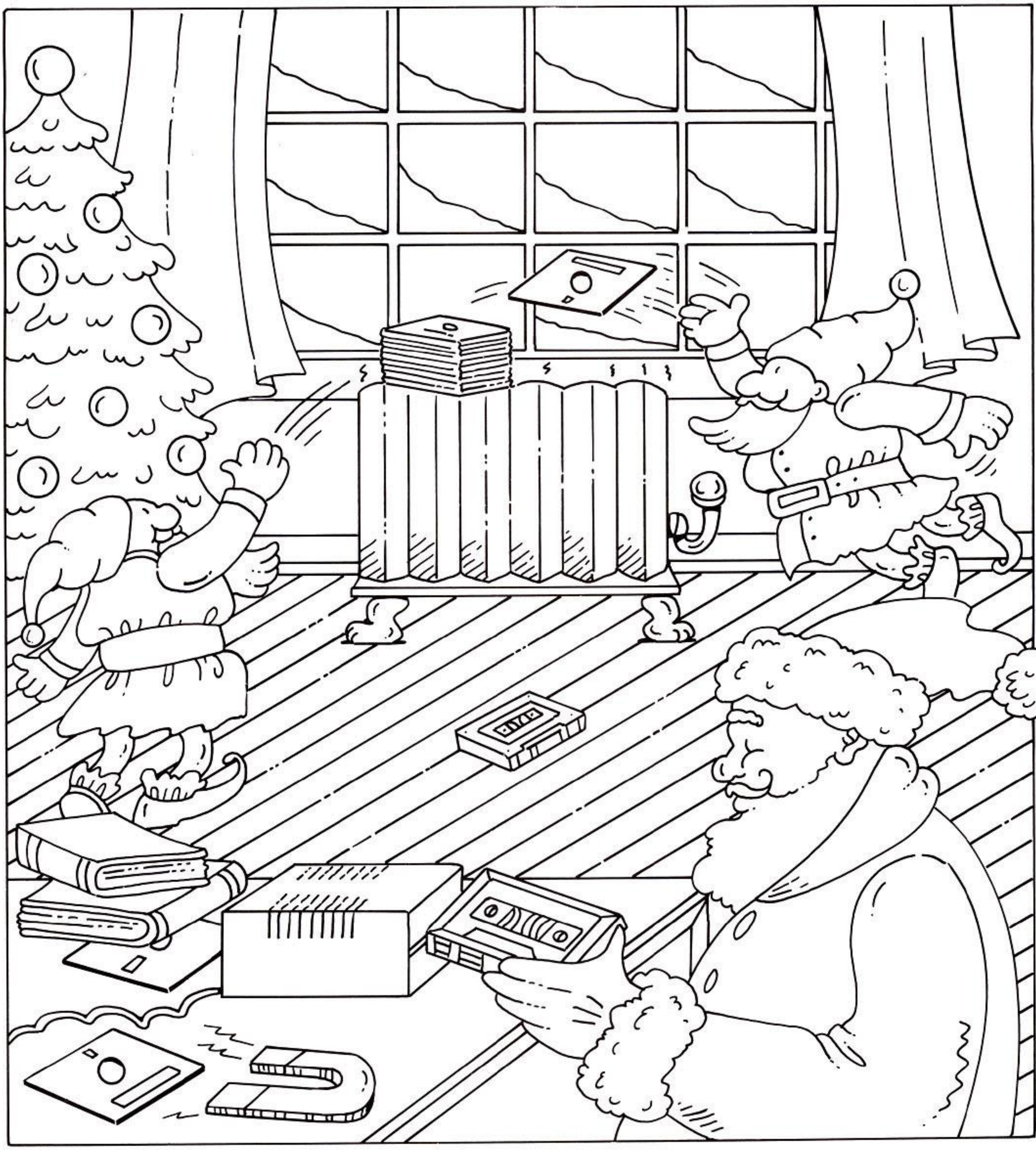
READINESS REPRODUCIBLES

NAME________________________

What's Wrong?

In six places in this picture, Santa and his elves are not using disks and tapes correctly. Put an **X** on each spot. Color the picture.



TERESA ANDERKO

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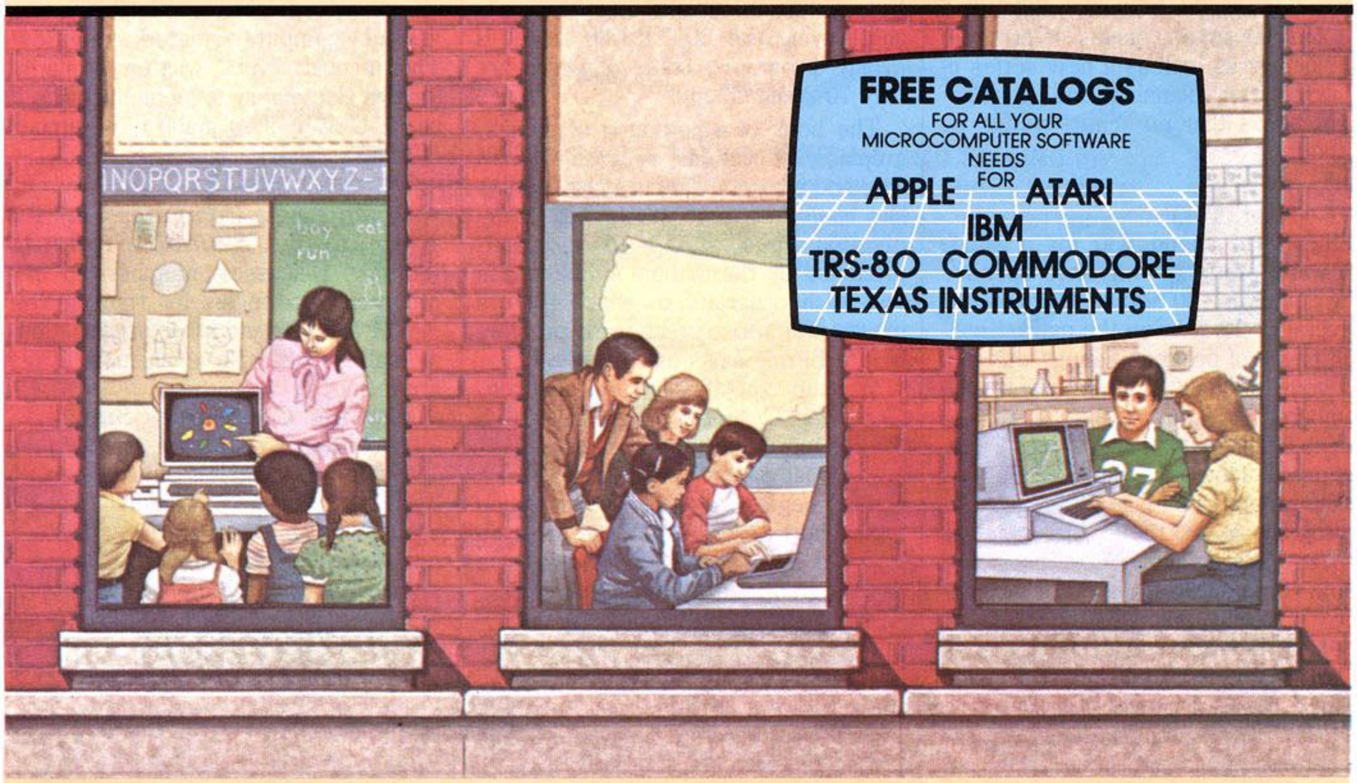

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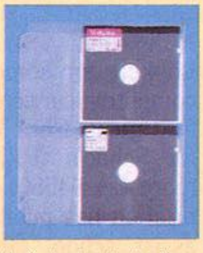

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BOOKSHELF

Programs Galore!

By Judy Simmons

In this month's column, we'll take a look at several books of program listings as well as a new series of computer planning and management books that no school should be without!

PROGRAM LISTINGS

Rather than spend $30 for a single software program, why not spend a few dollars for 30 software programs? Several books now on the market contain pages of program listings that you or your students can type into the computer.

You'll find that, in the process, students will soon start to make changes in the programs and might even create a program or two themselves!

What child wouldn't enjoy an action game set in outer space? Or a game of risk involving ancient monsters in deep, dark dungeons? In ***Pet Fun and Games***, by Ron Jeffries and Glenn Fisher (Osborne/McGraw-Hill; 1981; $11.95), you'll find these adventure programs and more, including a cops and robber chase, yahtzee, and blackjack.

The only drawback to *Fun and Games* is the three- to four-page length of some of the 31 program listings. However, the type is large, and I have found that most students are willing to spend some extra time at the keyboard in order to have these games to play.

Two other fun-and-games books, both published by Reston, are ***Fun with Microcomputers and BASIC*** by Donald Spencer (Rev Ed 1981; $9.95) and ***ZAP! POW! BOOM! Arcade Games for the VIC-20*** by Tim Hartnell and Mark Ramshaw (Rev Ed 1981; $9.95). Spencer's book contains shorter programs that deal mostly with numbers. The 80 programs in *Zap! Pow! Boom!* help students write poetry, send messages to one another, and try to outshoot the fastest draw in town.

Computer Carnival by Richard Ramella (Wayne Green Books; 1982; $16.97) is a big hit with students. Even younger students enjoy typing in and playing the 60 TRS-80 Level II BASIC programs, some of which are only 10-20 lines long.

The book is a potpourri of games, graphics, educational programs, quizzes, and puzzles. Games include oldies like bingo and keno, along with many original ones, designed and programmed by the author. *Quicksand* is one such program, in which players must enter the correct math problem before Bernie sinks out of sight.

Written specifically for children, *Computer Carnival* progresses from easy to more difficult programs, covering a broad range of skill levels. Each chapter begins with a clever illustration and a short description of the program followed by a section on how to use the program and the program listing. ***Carnival Companion*** ($24.97), a 30-minute cassette of all the programs, is also available from Wayne Green Books.

A similar book of program listings for Apple, TRS-80, and PET users is ***The Computer Tutor*** by Gary Orwig and William S. Hodges (Winthrop Publishers, Inc.; 1982; $10.95). (Make sure your computer has Floating Point BASIC, a version of BASIC with sophisticated math capabilities.)

This book is a collection of educational computer programs for CAI (computer-assisted instruction) at home or in school. Some of the educational programs include Capitals of Nations, Math Word Problems, Synonyms and Antonyms, Metrics, and Spelling Quiz.

Each section contains a brief description of the program, a program listing in computer print, and a sample run.

PLANNING AND MANAGEMENT

Looking for something to make your computer curriculum sparkle? Try a few gems from Computer Directions for Schools (P.O. Box 1136, Livermore CA 94550). The California organization has published five manuals to assist school faculties and staffs in planning, organizing, and implementing various computer-related activities. The manuals were written primarily for the elementary level and provide a basic, step-by-step guide in a number of areas.

The titles are:

- ***Organizing a Computer Club for Elementary School Students*** ($6.95). Discusses membership recruitment, strategies for training volunteer leaders, and other organizational matters. Sample evaluation forms are included.
- ***Gaining Community Support—Planning a Computer Awareness Day*** ($6.50). Supplies suggestions for developing positive community support. Includes letters, forms, and ideas for planning a successful Computer Awareness Day for the community.
- ***Organizing Your Computer Program—Lab Vs. Classroom Usage*** ($6.95). Covers strengths and weaknesses of both options, effective management techniques, and suggested room arrangements for each.
- ***Student Involvement—Implementing a Computer Tutor Program*** ($6.50). Offers suggestions for setting up an efficient tutoring program without overburdening teachers.
- ***Teaching Word Processing in the Elementary School*** ($6.95). Presents information on the hows, whens, and whys of teaching word processing. Includes seven lessons, writing assignments, and listings of word processing software.

CDS is also planning to publish four more how-to manuals on organizing your software, organizing a computer fair, administrative applications, and teaching programming to elementary students.

While these paperback manuals are only 20-45 pages in length, they contain a wealth of information. ■

Judy Simmons *is a librarian at the Robert E. Lee Elementary School in Denton, TX.*

programmer s

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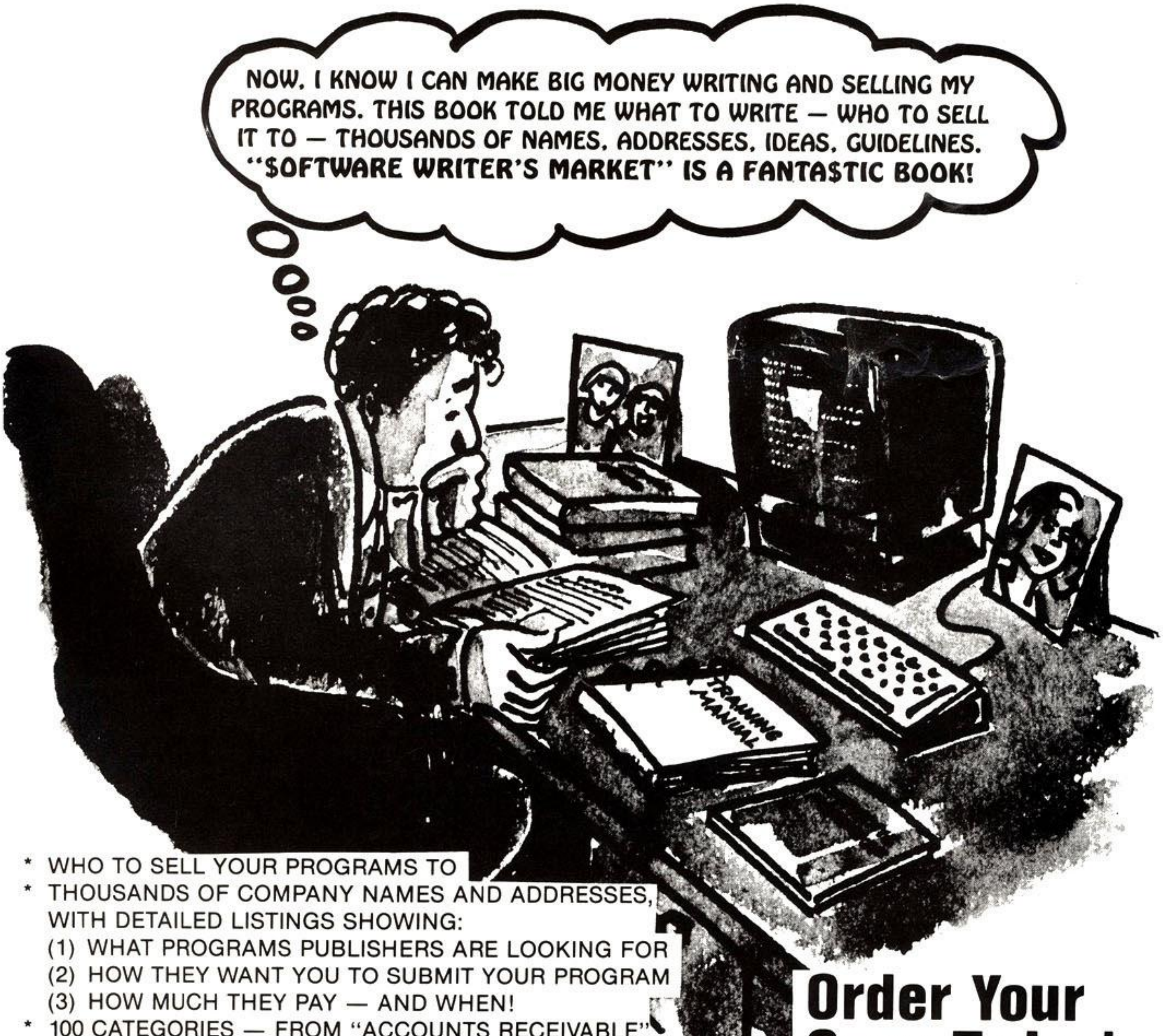
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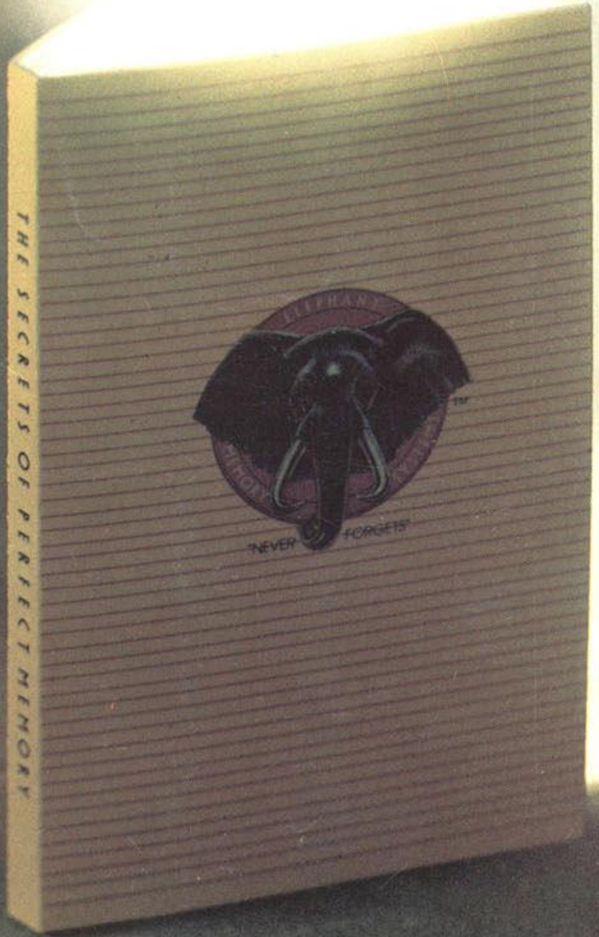

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